

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE 5,6 a
 Edition : 22.05.92
 Replaces : 11.91
 Test oil : ISO-4113
 Combination no. : 0 400 874 238
 Injection pump
 Pump designation : PES4A95D41ORS2685
 EP type number : 0 410 894 996
 Governor
 Governor design. : RSV400...1000A1C2187
 L
 Governor no. : 0 420 232 387

Customer-spec. information
 Customer : LIEBHERR

Engine : D904 NA

1st version kW : 90.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80
 : (2.65...2.85)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
 & maximum rack tra: 21.00
 Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed rpm : 975

Rack travel in mm : 12.20...12.30

Del.quantity cm³/ : 11.9...12.1

100 s: (11.7...12.3)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 415.0

Rack travel in mm : 6.6...6.8

Del.quantity cm³/ : 1.7...2.1

100 s: (1.4...2.3)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 975

Del.quantity : 119.0...121.0

1000 : (117.0...123.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 90...98

Testing:

1st rack travel in: 11.20
Speed rpm : 1015...1025
2nd rack travel in: 4.00
Speed rpm : 1030...1060
3rd rack travel in: 4.00
Speed rpm : 1070...1090
4th rack travel in: 1230
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 65...73
Setting point w/out bumper spring
Speed rpm : 415
Rack travel in mm : 6.2

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 415
Rack travel in mm : 6.10...6.30
Rack travel in mm : 2.00
Speed rpm : 535...595

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 975
Rack travel in m: 12.20...12.30
2nd speed rpm : 500
Rack travel in m: 12.20...12.40

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.20
Speed rpm : 1015...1025

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 415
Rack travel in mm : 6.60...6.80
Del.quantity cm3/ : 17.0...21.0
1000 s: (14.5...23.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

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BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE 5,6 A15
 Edition : 22.05.92
 Replaces : 02.92
 Test oil : ISO-4113
 Combination no. : 0 400 874 238R
 Injection pump
 Pump designation : PES4A95D41ORS2685
 EP type number : 0 410 894 996
 Governor
 Governor design. : RSV400...1000A1C2187
 L
 Governor no. : 0 420 232 387

Customer-spec. information
 Customer : LIEBHERR

Engine : D904 T

1st version kW : 90.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80
 : (2.65...2.85)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
 & maximum rack tra: 21.00
 Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed rpm : 975
 Rack travel in mm : 12.20...12.30
 Del. quantity cm³/ : 11.9...12.1
 100 s: (11.7...12.3)
 Spread cm³ : 0.3
 100 s: (0.6)

2nd speed rpm : 415.0
 Rack travel in mm : 6.6...6.8
 Del. quantity cm³/ : 1.7...2.1
 100 s: (1.4...2.3)
 Spread cm³ : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 975
 Del. quantity : 119.0...121.0
 1000 : (117.0...123.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 90...98

Testing:

1st rack travel in: 11.20
Speed rpm : 1015...1025
2nd rack travel in: 4.00
Speed rpm : 1030...1060
3rd rack travel in: 4.00
Speed rpm : 1070...1090
4th rack travel in: 1230
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever
position degrees: 65...73
Setting point w/out bumper spring
Speed rpm : 415
Rack travel in mm : 6.2

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 415
Rack travel in mm : 6.10...6.30
Rack travel in mm : 2.00
Speed rpm : 535...595

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 975
Rack travel in m: 12.20...12.30
2nd speed rpm : 500
Rack travel in m: 12.80...13.00
3rd speed rpm : 800
Rack travel in m: 12.80...13.00
4th speed rpm : 900
Rack travel in m: 12.40...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm³/ : 114.0...120.0
1000 s: (111.5...122.5)
Speed rpm : 800
Del.quantity cm³/ : 125.5...128.5
1000 s: (123.0...131.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.20
Speed rpm : 1015...1025

STARTING FUEL DELIVERY

Speed rpm : 100

A04

Del.quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 415
Rack travel in mm : 6.60...6.80
Del.quantity cm³/ : 17.0...21.0
1000 s: (14.5...23.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

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BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 24.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 875 005AA
 Injection pump
 Pump designation : PES5A95D410RS2417
 EP type number : 0 410 895 993
 Governor
 Governor design. : RSV300...115DA8C616L
 Governor no. : 0 420 232 323

Customer-spec. information
 Customer : KHD

Engine : F5L413FR

1st version kW : 103.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
 : (1.85...2.05)

Rack travel in mm : 9.00...12.00

A05

Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150
 Rack travel in mm : 9.50...9.60
 Del.quantity cm³/ : 9.3...9.5
 100 s: (-)

2nd speed rpm : 300.0
 Rack travel in mm : 5.9...6.1
 Del.quantity cm³/ : 1.2...1.8
 100 s: (-)
 Spread cm³ : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1150
 Del.quantity : 93.0...95.0
 1000 : (-)

RATED SPEED

1st version
 Control lever
 position degrees: 100...108

Testing:
 1st rack travel in: 8.50
 Speed rpm : 1180...1190
 2nd rack travel in: 4.00
 Speed rpm : 1195...1225
 3rd rack travel in: 4.00
 Speed rpm : 1215...1245
 4th rack travel in: 1380
 Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
 position degrees: 65...73

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.5

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 300
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 505...565

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1150
Rack travel in m: 9.50...9.60
2nd speed rpm : 650
Rack travel in m: 9.70...9.80
3rd speed rpm : 800
Rack travel in m: 9.50...9.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650
Del.quantity cm3/ : 87.5...90.5
1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.50
Speed rpm : 1180...1190

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...130.0
1000 s: (-)

Remarks:

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BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 24.07.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 875 005AB

Injection pump
Pump designation : PES5A95D410RS2417
EP type number : 0 410 895 993
Governor
Governor design. : PSV300...1150A8C616L
Governor no. : 0 420 232 323

Customer-spec. information
Customer : KHD

Engine : F5L413FR

1st version kw : 98.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
 : (1.85...2.05)
Rack travel in mm : 9.00...12.00

A07

Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150
Rack travel in mm : 9.20...9.30
Del. quantity cm³/ : 8.8...9.0
100 s : (0-)

2nd speed rpm : 300.0
Rack travel in mm : 5.9...6.1
Del. quantity cm³/ : 1.2...1.8
100 s : (-)
Spread cm³ : 0.3
100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1150
Del. quantity : 88.0...90.0
1000 : (-)

RATED SPEED

1st version
Control lever
position degrees: 100...108

Testing:
1st rack travel in: 8.20
Speed rpm : 1180...1190
2nd rack travel in: 4.00
Speed rpm : 1195...1225
3rd rack travel in: 4.00
Speed rpm : 1215...1245
4th rack travel in: 1380
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 65...73

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 300
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 505...565

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 9.20...9.30
2nd speed rpm : 650
Rack travel in m: 9.40...9.50
3rd speed rpm : 800
Rack travel in m: 9.20...9.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650
Del.quantity cm³/ : 82.5...85.5

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.20
Speed rpm : 1180...1190

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...130.0
1000 s: (-)

Remarks:

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BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 24.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 875 005AC
 Injection pump
 Pump designation : PES5A95D410RS2417
 EP type number : 0 410 895 993
 Governor
 Governor design. : RSV300...1150A8C616L
 Governor no. : 0 420 232 323

Customer-spec. information
 Customer : KHD

Engine : F5L413FR

1st version kW : 94.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
 : (1.85...2.05)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 8.90...9.00

Del.quantity cm³/ : 8.3...8.5

100 s: (-)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del.quantity cm³/ : 1.2...1.8

100 s: (-)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 83.0...85.0

1000 : (-)

RATED SPEED

1st version

Control lever

position degrees: 100...108

Testing:

1st rack travel in: 7.90

Speed rpm : 1180...1190

2nd rack travel in: 4.00

Speed rpm : 1195...1225

3rd rack travel in: 4.00

Speed rpm : 1215...1245

4th rack travel in: 1380

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 65...73

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.5

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 300
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 505...565

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 8.90...9.00
2nd speed rpm : 650
Rack travel in m: 9.10...9.20
3rd speed rpm : 800
Rack travel in m: 8.90...9.10

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650
Del. quantity cm³/ : 77.5...80.5
1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 7.90
Speed rpm : 1180...1190

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 120.0...130.0
1000 s: (-)

Remarks:

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BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 24.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 875 005AD
 Injection pump
 Pump designation : PESSA95D410RS2417
 EP type number : 0 410 895 993
 Governor
 Governor design. : RSV300...1150A8C616L
 Governor no. : 0 420 232 323

Customer-spec. information
 Customer : KHD

Engine : F5L413FR

1st version kW : 94.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
 : (1.85...2.05)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1075
 Rack travel in mm : 9.10...9.20
 Del.quantity cm3/ : 8.7...8.9
 100 s : (-)

2nd speed rpm : 300.0
 Rack travel in mm : 5.9...6.1
 Del.quantity cm3/ : 1.2...1.8
 100 s : (-)
 Spread cm3 : 0.3
 100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1075
 Del.quantity : 87.0...89.0
 1000 : (-)

RATED SPEED

1st version
 Control lever
 position degrees: 100...108

Testing:
 1st rack travel in: 8.10
 Speed rpm : 1105...1115
 2nd rack travel in: 4.00
 Speed rpm : 1120...1150
 3rd rack travel in: 4.00
 Speed rpm : 1140...1170
 4th rack travel in: 1380
 Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
 position degrees: 65...73

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.5

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 300
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 505...565

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1075
Rack travel in m: 9.10...9.20
2nd speed rpm : 650
Rack travel in m: 9.30...9.40
3rd speed rpm : 800
Rack travel in m: 9.10...9.30

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 650
Del.quantity cm³/ : 80.5...83.5
1000 s: (-)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 8.10
Speed rpm : 1105...1115

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...130.0
1000 s: (-)

Remarks:

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BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 31.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 876 198AA
 Injection pump
 Pump designation : PES6A95D410RS2416
 EP type number : 0 410 896 961
 Governor
 Governor design. : RSV300...1150A8C616D
 L
 Governor no. : 0 420 232 323
 Customer-spec. information
 Customer : KHD
 Engine : F6L413FR
 1st version kW : 124.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test lines : 1 680 750 014
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 1.90...2.00
 : (1.85...2.05)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150
 Rack travel in mm : 9.50...9.60
 Del.quantity cm3/ : 9.3...9.5
 100 s: (9.1...9.7)
 Spread cm3 : 0.3
 100 s: (0.6)
 2nd speed rpm : 300.0
 Rack travel in mm : 5.9...6.1
 Del.quantity cm3/ : 1.2...1.8
 100 s: (0.9...2.0)
 Spread cm3 : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 5.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1150
 Del.quantity : 93.0...95.0
 1000 : (91.0...97.0)
 Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 104...112

Testing:

1st rack travel in: 8.50
 Speed rpm : 1180...1190
 2nd rack travel in: 4.00
 Speed rpm : 1215...1245
 3rd rack travel in: 4.00

Speed rpm : 1250...1280
4th rack travel in: 1410
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.5

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 300
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 535...595

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 9.50...9.60
2nd speed rpm : 650
Rack travel in m: 9.70...9.80
3rd speed rpm : 800
Rack travel in m: 9.50...9.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650
Del. quantity cm³/ : 87.5...90.5
1000 s: (85.0...93.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 8.50
Speed rpm : 1180...1190

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 15.80...16.20

Remarks:

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APPLICATION

Installation 2300

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 31.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 876 198AB
 Injection pump
 Pump designation : PES6A95D41ORS2416
 EP type number : 0 410 896 961
 Governor
 Governor design. : RSV300...1150A8C616D
 L
 Governor no. : 0 420 232 323
 Customer-spec. information
 Customer : KHD
 Engine : F6L413FR
 1st version kW : 118.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test lines : 1 680 750 014
 Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 1.90...2.00
 : (1.85...2.05)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150
 Rack travel in mm : 9.20...9.30
 Del. quantity cm³/ : 8.8...9.0
 100 s: (8.6...9.2)
 Spread cm³ : 0.3
 100 s: (0.6)

2nd speed rpm : 300.0
 Rack travel in mm : 5.9...6.1
 Del. quantity cm³/ : 1.2...1.8
 100 s: (0.9...2.0)
 Spread cm³ : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 5.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1150
 Del. quantity : 88.0...90.0
 1000 : (86.0...92.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 104...112

Testing:
 1st rack travel in: 8.20
 Speed rpm : 1180...1190
 2nd rack travel in: 4.00
 Speed rpm : 1215...1245
 3rd rack travel in: 4.00

Speed rpm : 1250...1280
4th rack travel in: 1410
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.5

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 300
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 535...595

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 9.20...9.30
2nd speed rpm : 650
Rack travel in m: 9.40...9.50
3rd speed rpm : 800
Rack travel in m: 9.20...9.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650
Del.quantity cm³/ : 82.5...85.5
1000 s: (80.0...88.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.20
Speed rpm : 1180...1190

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 15.80...16.20

Remarks:

:

APPLICATION

Installation 2300

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 31.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 876 198AC
 Injection pump
 Pump designation : PES6A95D41ORS2416
 EP type number : 0 410 896 961
 Governor
 Governor design. : RSV300...1150A8C616D
 L
 Governor no. : 0 420 232 323

Customer-spec. information
 Customer : KHD

Engine : F6L413FR

1st version kW : 112.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
 : (1.85...2.05)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150
 Rack travel in mm : 8.90...9.00
 Del.quantity cm³/ : 8.3...8.5
 100 s: (8.1...8.7)
 Spread cm³ : 0.3
 100 s: (0.6)

2nd speed rpm : 300.0
 Rack travel in mm : 5.9...6.1
 Del.quantity cm³/ : 1.2...1.8
 100 s: (0.9...2.0)
 Spread cm³ : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 5.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1150
 Del.quantity : 83.0...85.0
 1000 : (81.0...87.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 104...112

Testing:
 1st rack travel in: 7.90
 Speed rpm : 1180...1190
 2nd rack travel in: 4.00
 Speed rpm : 1210...1240
 3rd rack travel in: 4.00

Speed rpm : 1250...1280
4th rack travel in: 1410
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.5

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 300
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 535...595

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 8.90...9.00
2nd speed rpm : 650
Rack travel in m: 9.10...9.20
3rd speed rpm : 800
Rack travel in m: 8.90...9.10

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650
Del.quantity cm³/ : 77.5...80.5
1000 s: (75.0...83.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 7.90
Speed rpm : 1180...1190

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 15.80...16.20

Remarks:

:

APPLICATION

Installation 2300

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 31.07.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 400 876 198AD

Injection pump
 Pump designation : PES6A95D410RS2416
 EP type number : 0 410 896 961
 Governor
 Governor design. : RSV300...1150A8C616D

Governer no. : 0 420 232 323

Customer-spec. information
 Customer : KHD

Engine : F6L413FR

1st version kW : 108.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
 : (1.85...2.05)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 8.60...8.70

Del.quantity cm³/ : 7.9...8.1

100 s : (7.7...8.3)

Spread cm³ : 0.3

100 s : (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del.quantity cm³/ : 1.2...1.8

100 s : (0.9...2.0)

Spread cm³ : 0.3

100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 79.0...81.0

1000 : (77.0...83.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 104...112

Testing:

1st rack travel in: 7.60

Speed rpm : 1180...1190

2nd rack travel in: 4.00

Speed rpm : 1210...1240

3rd rack travel in: 4.00

Speed rpm : 1245...1275
4th rack travel in: 1410
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.5

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 300
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 535...595

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 8.60...8.70
2nd speed rpm : 650
Rack travel in m: 8.80...8.90
3rd speed rpm : 800
Rack travel in m: 8.60...8.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650
Del. quantity cm³/ : 72.5...75.5
1000 s: (70.0...78.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 7.60
Speed rpm : 1180...1190

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 15.80...16.20

Remarks:

:

APPLICATION

Installation 2300

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 31.07.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 876 198AE

Injection pump
Pump designation : PES6A95D410RS2416
EP type number : 0 410 896 961
Governor
Governor design. : RSV300...115DA8C616D
L
Governor no. : 0 420 232 323

Customer-spec. information
Customer : KHD

Engine : F6L413FR

1st version kW : 95.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
: (1.85...2.05)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 8.00...8.10

Del. quantity cm³/ : 7.1...7.3
100 s : (6.9...7.5)

Spread cm³ : 0.3
100 s : (0.6)

2nd speed rpm : 300.0
Rack travel in mm : 5.9...6.1
Del. quantity cm³/ : 1.2...1.8
100 s : (0.9...2.0)
Spread cm³ : 0.3
100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 5.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1150
Del. quantity : 71.0...73.0
1000 : (69.0...75.0)
Spread cm³ : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control Lever
position degrees: 104...112

Testing:
1st rack travel in: 7.00
Speed rpm : 1180...1190
2nd rack travel in: 4.00
Speed rpm : 1205...1235
3rd rack travel in: 4.00

Speed rpm : 1240...1270
4th rack travel in: 1410
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.5

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 300
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 535...595

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 8.00...8.10
2nd speed rpm : 650
Rack travel in m: 10.40...10.50
3rd speed rpm : 800
Rack travel in m: 8.00...8.20

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650
Del.quantity cm³/ : 63.5...66.5
1000 s: (61.0...69.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 7.00
Speed rpm : 1180...1190

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 15.80...16.20

Remarks:

:

APPLICATION

Installation 2300

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 31.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 876 198AF
 Injection pump
 Pump designation : PES6A95D41DRS2416
 EP type number : 0 410 896 961
 Governor
 Governor design. : RSV300...1150A8C616D
 L
 Governor no. : 0 420 232 323

Customer-spec. information
 Customer : KHD

Engine : F6L413FR

1st version kW : 118.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test lines : 1 680 750 014
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 1.90...2.00
 : (1.85...2.05)

Rack travel in mm : 9.00...12.00
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1075
 Rack travel in mm : 9.60...9.70
 Del.quantity cm³/ : 9.3...9.5
 100 s : (9.1...9.7)
 Spread cm³ : 0.3
 100 s : (0.6)
 2nd speed rpm : 300.0
 Rack travel in mm : 5.9...6.1
 Del.quantity cm³/ : 1.2...1.8
 100 s : (0.9...2.0)
 Spread cm³ : 0.3
 100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 5.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1075
 Del.quantity : 93.0...95.0
 1000 : (91.0...97.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 54...62

Testing:
 1st rack travel in: 8.60
 Speed rpm : 1115...1125
 2nd rack travel in: 4.00
 Speed rpm : 1140...1170
 3rd rack travel in: 4.00

Speed rpm : 1220...1250
4th rack travel in: 1410
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 20...28
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.5

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 300
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 535...595

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1075
Rack travel in m: 9.60...9.70
2nd speed rpm : 650
Rack travel in m: 9.80...9.90
3rd speed rpm : 800
Rack travel in m: 9.60...9.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650
Del.quantity cm³/ : 88.5...91.5
1000 s: (86.0...94.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.60
Speed rpm : 1115...1125

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 15.80...16.20

Remarks:

:

APPLICATION

Installation 2300

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 31.07.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 876 199AA
Injection pump
Pump designation : PES6A95D41ORS2416
EP type number : 0 410 896 961
Governor
Governor design. : RSV300...750A7C616L
Governor no. : 0 420 232 322

Customer-spec. information
Customer : KHD

Engine : F6L413FR

1st version kW : 100.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
: (1.95...2.05)

Rack travel in mm : 9.00...12.00

A25

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000
Rack travel in mm : 8.50...8.60
Del.quantity cm3/ : 7.7...7.9
100 s: (7.5...8.1)
Spread cm3 : 0.3
100 s: (0.6)

2nd speed rpm : 300.0
Rack travel in mm : 6.4...6.6
Del.quantity cm3/ : 1.2...1.8
100 s: (0.9...2.0)
Spread cm3 : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Del.quantity : 77.0...79.0
1000 : (75.0...81.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 92...100

Testing:
1st rack travel in: 7.50
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1060...1090
4th rack travel in: 930
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 69...77

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.0

Testing:

Speed rpm : 100

Minimum rack trave: 19.50

Speed rpm : 300

Rack travel in mm : 6.40...6.60

Rack travel in mm : 2.00

Speed rpm : 470...530

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000

Rack travel in m: 8.50...8.60

2nd speed rpm : 650

Rack travel in m: 8.90...9.00

3rd speed rpm : 800

Rack travel in m: 8.70...8.90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650

Del.quantity cm3/ : 75.5...78.5

1000 s: (73.0...81.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 7.50

Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 120.0...130.0

1000 s: (117.0...133.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 1 o 1
Edition : 31.07.92
Replaces : 02.90
Test oil : ISO-4113
Combination no. : 0 400 876 344
Injection pump
Pump designation : PES6A95D41ORS2625
EP type number : 0 410 896 926
Governor
Governor design. : RSV325...1250A2C1159
Governor no. : 0 420 232 490

Customer-spec. information
Customer : KHD

Engine : BF6L913C

1st version kW : 130.0
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
: (1.85...2.05)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.60...11.70

Del.quantity cm3/ : 9.3...9.5
100 s: (9.1...9.7)

Spread cm3 : 0.3
100 s: (0.6)

2nd speed rpm : 350.0
Rack travel in mm : 6.4...6.6
Del.quantity cm3/ : 1.0...1.6
100 s: (0.7...1.8)
Spread cm3 : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1250
Aneroid pressure h: 900
Del.quantity : 93.0...95.0
1000 : (91.0...97.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 92...100

Testing:
1st rack travel in: 10.60
Speed rpm : 1290...1300
2nd rack travel in: 4.00
Speed rpm : 1320...1350

3rd rack travel in: 4.00
Speed rpm : 1370...1400
4th rack travel in: 1540
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 63...71
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.0

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 350
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 575...635

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 11.60...11.70
2nd speed rpm : 500
Rack travel in m: 12.00...12.10
4th speed rpm : 985
Rack travel in m: 11.70...11.90

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.00...12.10

Measurement

Speed 1/min : 500
1st pressure hPa : -
Rack travel in m: 10.40...10.50
2nd pressure hPa : 550
Rack travel in m: 10.70...10.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 850
Del.quantity cm³/ : 94.5...97.5
1000 s: (92.0...100.0)
Speed rpm : 1150
Del.quantity cm³/ : 92.0...95.0
1000 s: (89.5...97.5)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 54.0...56.0
1000 s: (52.0...58.0)

RACK STOP ADJUSTMENT

Speed rpm : 500

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.60
Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 17.10...17.30

Remarks:

APPLICATION

Combine-harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE
 Edition : 21.05.92
 Replaces : 03.92
 Test oil : ISO-4113

Combination no. : 0 400 876 381

Injection pump
 Pump designation : PES6A100D410RS2762-1
 EP type number : 0 410 806 008
 Governor
 Governor design. : RSV425...1050AOC2252
 -1L
 Governor no. : 0 420 232 571

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6076TRW-30

1st version kW : 131.5
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

B01

Prestroke mm : 2.95...3.05
 : (2.90...3.10)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.30...11.40

Del.quantity cm³/ : 10.9...11.1
 100 s : (10.7...11.3)

Spread cm³ : 0.4
 100 s : (0.6)

2nd speed rpm : 425.0
 Rack travel in mm : 5.5...5.7
 Del.quantity cm³/ : 2.1...2.5
 100 s : (1.9...2.7)
 Spread cm³ : 0.6
 100 s : (0.8)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1050
 Del.quantity : 109.0...111.0
 1000 : (107.0...113.0)
 Spread cm³ : 4.00
 1000 : (6.50)

RATED SPEED

1st version
 Control lever
 position degrees: 42...50

Testing:

1st rack travel in: 10.30
Speed rpm : 1095...1105
2nd rack travel in: 4.00
Speed rpm : 1165...1175
3rd rack travel in: 4.00
Speed rpm : 1155...1185
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 20...28
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 5.1

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 425
Rack travel in mm : 5.50...5.70

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 11.30...11.40
2nd speed rpm : 750
Rack travel in m: 13.10...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del. quantity cm³/ : 134.5...138.5
1000 s: (132.5...140.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.30
Speed rpm : 1095...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 100.0...120.0
1000 s: (95.0...125.0)

LOW IDLE

Speed rpm : 425
Rack travel in mm : 5.50...5.70
Del. quantity cm³/ : 21.5...25.5
1000 s: (19.5...27.5)

Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE41833
Start-of-delivery mark = 13,5° after
start of delivery cyl. 1.

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 w 6
Edition : 21.05.92
Replaces : 03.92
Test oil : ISO-4113

Combination no. : 0 400 876 394

Injection pump
Pump designation : PES6A100D410RS2754
EP type number : 0 410 806 002
Governor
Governor design. : RSV425...1100AOC2234
-2L
Governor no. : 0 420 232 569

Customer-spec. information

Customer : JOHN DEERE

Engine : 6076TRW04

1st version kW : 122.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

B03

Prestroke mm : 2.95...3.05
: (2.90...3.10)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.60...10.70

Del. quantity cm³/ : 10.0...10.2

100 s : (9.8...10.4)

Spread cm³ : 0.4

100 s : (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 5.5...5.7

Del. quantity cm³/ : 2.6...3.0

100 s : (2.4...3.2)

Spread cm³ : 0.6

100 s : (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 100.5...102.5

1000 : (98.5...104.5)

Spread cm³ : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:

1st rack travel in: 9.60
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1200...1210
3rd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 17...25
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 5.1

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 425
Rack travel in mm : 5.50...5.70

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 10.60...10.70
2nd speed rpm : 700
Rack travel in m: 11.80...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del. quantity cm³/ : 125.0...128.0
1000 s: (122.5...130.5)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 9.60
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 100.0...120.0
1000 s: (95.0...125.0)

LOW IDLE

Speed rpm : 425
Rack travel in mm : 5.50...5.70
Del. quantity cm³/ : 26.0...30.0
1000 s: (24.0...32.0)

Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # PE51026
Start-of-delivery mark = 13,5° after
start of delivery cyl. 1.

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE
 Edition : 24.07.92
 Replaces : 03.92
 Test oil : ISO-4113
 Combination no. : 0 400 876 395
 Injection pump
 Pump designation : PES6A100D410RS2676
 EP type number : 9 410 230 023
 Governor
 Governor design. : RSV425...110CA2C2161
 -1L
 Governor no. : 9 420 234 133

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6466T

1st version kW : 120.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 457 413 010
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 101
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,6
 Test lines : 1 680 750 008
 Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 32...34

Prestroke mm : 2.45...2.55
 : (2.40...2.60)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100
 Rack travel in mm : 9.40...9.50
 Del. quantity cm³/ : 9.8...10.0
 100 s : (9.6...10.2)
 Spread cm³ : 0.4
 100 s : (0.6)

2nd speed rpm : 425.0
 Rack travel in mm : 5.3...5.5
 Del. quantity cm³/ : 2.0...2.4
 100 s : (1.8...2.7)
 Spread cm³ : 0.6
 100 s : (0.8)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Aneroid pressure h: 700
 Del. quantity : 98.5...100.5
 1000 : (96.5...102.5)
 Spread cm³ : 4.00
 1000 : (6.50)

RATED SPEED

1st version
 Control lever
 position degrees: 49...57

Testing:

1st rack travel in: 8.40
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1205...1215
3rd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever
position degrees: 26...34
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 4.9

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 425
Rack travel in mm : 5.30...5.50

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 9.40...9.40
2nd speed rpm : 750
Rack travel in m: 10.70...10.90

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 10.60...10.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.20...9.40
2nd pressure hPa : 80
Rack travel in m: 9.40...9.80
3rd pressure hPa : 175
Rack travel in m: 10.30...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 750
Del.quantity cm3/ : 116.0...119.0
1000 s: (114.0...121.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm3/ : 86.0...90.0
1000 s: (84.0...92.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.40
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 190.0...210.0
1000 s: (185.0...215.0)

LOW IDLE

Speed rpm : 425
Rack travel in mm : 5.30...5.50
Del.quantity cm3/ : 20.5...24.5
1000 s: (18.0...27.0)
Spread cm3 : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE23746

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE
 Edition : 24.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 876 399
 Injection pump
 Pump designation : PES6A100D410RS2754
 EP type number : 0 410 806 002
 Governor
 Governor design. : RSV425...110JADC2234
 -3L
 Governor no. : 0 420 232 577

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6076TRW01

1st version kw : 106.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

B07

Prestroke mm : 2.95...3.05
 : (2.90...3.10)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 9.70...9.80

Del. quantity cm³/ : 8.9...9.1
 100 s : (8.7...9.3)

Spread cm³ : 0.4
 100 s : (0.6)

2nd speed rpm : 425.0
 Rack travel in mm : 5.7...5.9
 Del. quantity cm³/ : 2.6...3.0
 100 s : (2.3...3.2)
 Spread cm³ : 0.6
 100 s : (0.8)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Del. quantity : 89.0...91.0
 1000 : (87.0...93.0)
 Spread cm³ : 4.00
 1000 : (6.50)

RATED SPEED

1st version
 Control lever
 position degrees: 44...52

Testing:

1st rack travel in: 8.70
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1200...1210
3rd rack travel in: 4.00
Speed rpm : 1200...1230
4th rack travel in: 1350
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 20...28
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 5.3

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 425
Rack travel in mm : 5.70...5.90

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 9.70...9.80
2nd speed rpm : 700
Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del. quantity cm³/ : 110.5...114.5
1000 s: (108.5...116.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.70
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 100.0...120.0
1000 s: (95.0...125.0)

LOW IDLE

Speed rpm : 425
Rack travel in mm : 5.70...5.90
Del. quantity cm³/ : 26.0...30.0
1000 s: (23.5...32.5)

Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE51910
Start-of-delivery mark = 13,5° after
start of delivery cyl. 1.

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE
 Edition : 24.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 876 400
 Injection pump
 Pump designation : PES6A100D41ORS2762-1
 EP type number : 0 410 806 008
 Governor
 Governor design. : RSV425...110CAQC2225
 -6L
 Governor no. : 0 420 232 578

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6076ARW-09

1st version kW : 145.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05
 : (2.90...3.10)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.90...12.00

Del. quantity cm³/ : 11.4...11.6

100 s : (11.2...11.8)

Spread cm³ : 0.4

100 s : (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 5.8...6.0

Del. quantity cm³/ : 2.6...3.0

100 s : (2.3...3.2)

Spread cm³ : 0.6

100 s : (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del. quantity : 114.0...116.0

1000 : (112.0...118.0)

Spread cm³ : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 43...51

Testing:

1st rack travel in: 10.90
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1205...1215
3rd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 20...28
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 5.4

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 425
Rack travel in mm : 5.80...6.00

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.90...12.00
2nd speed rpm : 750
Rack travel in m: 13.90...14.10

Aneroid/Altitude

Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.90...14.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.80...12.00
2nd pressure hPa : 500
Rack travel in m: 12.40...12.50
3rd pressure hPa : 665
Rack travel in m: 13.30...13.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 750
Del.quantity cm³/ : 143.5...147.5
1000 s: (141.5...149.5)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 129.0...133.0
1000 s: (127.0...135.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.90
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...120.0
1000 s: (95.0...125.0)

LOW IDLE

Speed rpm : 425
Rack travel in mm : 5.80...6.00
Del.quantity cm³/ : 26.0...30.0
1000 s: (23.5...32.5)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE51911

Start-of-delivery mark = 13,5° after
start of delivery cyl. 1.

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE
 Edition : 24.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 876 401
 Injection pump
 Pump designation : PES6A100D410RS2762
 EP type number : 0 410 806 003
 Governor
 Governor design. : RSV400...1100ADC2204
 -9L
 Governor no. : 0 420 232 579

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6076TT

1st version kW : 124.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 457 413 010
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 101
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,6
 Test lines : 1 680 750 008
 Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05
 : (2.90...3.10)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.20...11.30

Del.quantity cm³/ : 10.4...10.6

100 s: (10.2...10.8)

Spread cm³ : 0.4

100 s: (0.6)

2nd speed rpm : 400.0
 Rack travel in mm : 6.1...6.3
 Del.quantity cm³/ : 3.1...3.5
 100 s: (2.8...3.7)

Spread cm³ : 0.6
 100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Del.quantity : 104.0...106.0
 1000 : (102.0...108.0)
 Spread cm³ : 4.00
 1000 : (6.50)

RATED SPEED

1st version
 Control lever
 position degrees: 47...55

Testing:

1st rack travel in: 10.20
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1205...1215
3rd rack travel in: 4.60
Speed rpm : 1195...1225
4th rack travel in: 1350
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 21...29
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.7

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 6.10...6.30

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.20...11.30
2nd speed rpm : 700
Rack travel in m: 12.50...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del.quantity cm³/ : 127.5...131.5
1000 s: (125.5...133.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...120.0
1000 s: (95.0...125.0)

LOW IDLE

Speed rpm : 400
Rack travel in mm : 6.10...6.30
Del.quantity cm³/ : 31.0...35.0
1000 s: (28.5...37.5)

Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE51912
Start-of-delivery mark = 13,5° after
start of delivery cyl. 1.

Adjustment without torque-control
spring retainer with 1 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

APPLICATION

Wheel loader

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VAL
 Edition : 24.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 876 402
 Injection pump
 Pump designation : PES6A95D32ORS2832
 EP type number : 0 410 896 897
 Governor
 Governor design. : RSV500...1100AOC2218
 -1R
 Governor no. : 0 420 233 294

Customer-spec. information
 Customer : VALMET

Engine : 620DS MK II

1st version kW : 131.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 4.50...5.50

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.00...12.10

Del.quantity cm³/ : 10.6...10.8

100 s: (10.4...11.0)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 500.0

Rack travel in mm : 4.7...4.9

Del.quantity cm³/ : 1.8...2.4

100 s: (1.5...2.6)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 106.0...108.0

1000 : (104.0...110.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 85...93

Testing:
1st rack travel in: 11.00
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1200...1230
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 66...74
Setting point w/out bumper spring
Speed rpm : 500
Rack travel in mm : 4.8

Testing:
Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 500
Rack travel in mm : 4.70...4.90
Rack travel in mm : 2.00
Speed rpm : 510...570

SET IDLE AUXILIARY SPRING

Rack travel in mm : 3.00

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.00...12.10
2nd speed rpm : 700
Rack travel in m: 13.40...13.60
3rd speed rpm : 950
Rack travel in m: 12.40...12.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 800
Rack travel mm : 13.40...13.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.70...11.80
2nd pressure hPa : 650
Rack travel in m: 12.80...12.90
3rd pressure hPa : 525
Rack travel in m: 12.00...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del.quantity cm3/ : 115.0...118.0
1000 s: (112.5...120.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 84.5...87.5
1000 s: (82.5...89.5)

BREAKAWAY

1st version

7mm rack travel less than

full load rack tr: 11.00
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 195.0...205.0
1000 s: (192.0...208.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 500
Rack travel in mm : 4.70...4.90
Del.quantity cm3/ : 18.0...24.0
1000 s: (15.5...26.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 03.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 876 403
 Injection pump
 Pump designation : PES6A95D410RS2471
 EP type number : 0 410 896 952
 Governor
 Governor design. : RSV325...1250A2C661-
 2L
 Governor no. : 0 420 232 581

Customer-spec. information
 Customer : KHD

Engine : BF6L913C

1st version kW : 132.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
 : (1.85...2.05)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250
 Rack travel in mm : 11.70...11.80
 Del. quantity cm³/ : 9.6...9.8
 100 s: (9.4...10.0)
 Spread cm³ : 0.3
 100 s: (0.6)

2nd speed rpm : 325.0
 Rack travel in mm : 7.2...7.4
 Del. quantity cm³/ : 0.9...1.5
 100 s: (0.6...1.7)
 Spread cm³ : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1250
 Del. quantity : 96.0...98.0
 1000 : (94.0...100.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 96...104

Testing:
 1st rack travel in: 10.70
 Speed rpm : 1290...1300
 2nd rack travel in: 4.00
 Speed rpm : 1340...1370
 3rd rack travel in: 4.00

Speed rpm : 1405...1435
4th rack travel in: 1525
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 67...75
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 6.8
Speed rpm : 325
Rack travel in mm : 7.20...7.40
Rack travel in mm : 2.00
Speed rpm : 610...670

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 11.70...11.80
2nd speed rpm : 500
Rack travel in m: 11.70...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 850
Del.quantity cm³/ : 91.5...94.5
1000 s: (89.0...97.0)

BREAKAWAY

1st version

1mm rack travel less ~~10.70~~

full load rack tr: ~~10.70~~
Speed rpm : ~~1250~~...1300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 15.50...15.90

Remarks:

:

APPLICATION

Compressor

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : STE
Edition : 21.05.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 401 838 706

Injection pump
Pump designation : PE8P110A120LS3252
EP type number : 0 411 818 721
Governor
Governor design. : RQV250...1100PA951-1
Governor no. : 0 421 813 858

Customer-spec. information
Customer : SNF

Engine : WD815.69

1st version kW : 250.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 4- 8- 6- 3-
7- 2

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.20...12.30

Del. quantity cm³/ : 15.3...15.5
100 s : (15.0...15.8)

Spread cm³ : 0.4
100 s : (0.7)

2nd speed rpm : 300.0
Rack travel in mm : 3.9...4.1
Del. quantity cm³/ : 1.4...2.0
100 s : (1.1...2.3)
Spread cm³ : 0.4
100 s : (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 0.90...1.30
2nd speed rpm : 450
travel mm : 2.80...3.40
3rd speed rpm : 700
travel mm : 4.50...5.10
4th speed rpm : 1145
travel mm : 8.40...8.60
5th speed rpm : 1230
travel mm : 10.10...10.50

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1140
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Aneroid pressure h: 800
Del. quantity : 153.0...155.0
1000 : (150.0...158.0)

Spread cm³ : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: ?

Testing:

1st rack travel in: 11.30
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1210...1240
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: ?

Testing:

Speed rpm : 100
Minimum rack travel: 5.00
Speed rpm : 300
Rack travel in mm : 3.90...4.10

CONSTANT REGULATION

Speed rpm : 250...390

TORQUE CONTROL

Dimension a mm : 1.00
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.20...12.30
2nd speed rpm : 650
Rack travel in m: 13.20...13.30

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 800
Rack travel mm : 13.20...13.30

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.20...9.40
2nd pressure hPa : 440
Rack travel in m: 11.90...12.00
3rd pressure hPa : 260
Rack travel in m: 9.90...10.10

START CUT-OUT

Speed 1/min : 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800
Speed rpm : 650
Del. quantity cm³/ : 176.0...180.0
1000 s: (173.0...183.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 98.0...100.0
1000 s: (95.0...103.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 220.0...260.0
1000 s: (216.0...264.0)
Rack travel in mm : 20.00...21.00

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : STE
 Edition : 21.05.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 838 708
 Injection pump
 Pump designation : PE8P110A12OLS3252
 EP type number : 0 411 818 721
 Governor
 Governor design. : RQ300/1100PA958-1
 Governor no. : 0 421 801 523

Customer-spec. information
 Customer : SNF

Engine : WD815.69
 1st version kW : 250.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test lines : 1 680 750 089
 Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 4- 8- 6- 3-
 7- 2

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100
 Rack travel in mm : 12.20...12.30
 Del.quantity cm³/ : 15.3...15.5
 100 s : (15.0...15.8)
 Spread cm³ : 0.4
 100 s : (0.7)

2nd speed rpm : 300.0
 Rack travel in mm : 3.9...4.1
 Del.quantity cm³/ : 1.4...2.0
 100 s : (1.1...2.3)
 Spread cm³ : 0.4
 100 s : (0.7)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 600
 Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Aneroid pressure h: 800
 Del.quantity : 153.0...155.0
 1000 : (150.0...158.0)
 Spread cm³ : 4.00
 1000 : (7.50)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600
 Rack travel in mm : 16.0

Testing:
 1st rack travel in: 11.20
 Speed rpm : 1145...1160
 2nd rack travel in: 4.00

Speed rpm : 1200...1230
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.0

Testing:

Speed rpm : 100
Minimum rack travel: 5.20
Speed rpm : 300
Rack travel in mm : 3.90...4.10
Rack travel in mm : 2.00
Speed rpm : 340...380

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.20...12.30
2nd speed rpm : 650
Rack travel in m: 13.20...13.30

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 800
Rack travel mm : 13.20...13.30

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.20...9.40
2nd pressure hPa : 440
Rack travel in m: 11.90...12.00
3rd pressure hPa : 260
Rack travel in m: 9.90...10.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800
Speed rpm : 650
Del.quantity cm³/ : 176.0...180.0
1000 s: (173.0...183.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 98.0...100.0
1000 s: (95.0...103.0)

BREAKAWAY

B20

1st version
1mm rack travel less than

full load rack tr: 11.20
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 220.0...260.0
1000 s: (216.0...264.0)
Rack travel in mm : 20.00...21.00

Remarks:

:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAO 20,9 a
Edition : 26.06.92
Replaces : 12.91
Test oil : ISO-4113

Combination no. : 0 401 840 110

Injection pump
Pump designation : PE12P120A520/4LS859
EP type number : 0 411 820 037
Governor
Governor design. : RQ900PA663-9
Governor no. : 0 421 801 577

Customer-spec. information
Customer : DAEWOO

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10
 : (2.95...3.15)
Rack travel in mm : 9.00...12.00
Firing order : 12- 1- 5- 9- 8- 3-
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 10.00...10.10

Del. quantity cm³/ : 16.9...17.1
100 s: (16.6...17.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 250.0
Rack travel in mm : 4.1...4.5
Del. quantity cm³/ : 1.7...2.3
100 s: (1.4...2.6)
Spread cm³ : 0.8
100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 850
Del. quantity : 169.0...171.0
1000 : (166.0...174.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Testing:
1st rack travel in: 9.00
Speed rpm : 900...905
2nd rack travel in: 4.00
Speed rpm : 932...946
4th rack travel in: 1000
Speed rpm : 0.00...1.00

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.00
Speed rpm : 900...905

Remarks:

: 2-7482

APPLICATION

Generator set



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 401 846 569

Injection pump
 Pump designation : PE6P120A320RS415-1
 EP type number : 0 411 826 123
 Governor
 Governor design. : RQ250/1100PA417R
 Governor no. : 0 421 801 084

Customer-spec. information
 Customer : DAF

Engine : KT 200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 10.30...10.40

Del. quantity cm³/ : 16.0...16.2
 100 s: (15.7...16.5)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 250.0
 Rack travel in mm : 6.7...6.9
 Del. quantity cm³/ : 1.4...2.0
 100 s: (1.1...2.3)

Spread cm³ : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 700
 Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 850
 Aneroid pressure h: 700
 Del. quantity : 160.0...162.0
 1000 : (157.0...165.0)

Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 700
 Rack travel in mm : 16.0

Testing:
 1st rack travel in: 9.30
 Speed rpm : 1125...1140
 2nd rack travel in: 4.00
 Speed rpm : 1175...1205
 4th rack travel in: 1300
 Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 6.2

Testing:

Speed rpm : 150
Minimum rack trave: 7.00
Speed rpm : 250
Rack travel in mm : 6.10...6.30
Rack travel in mm : 2.00
Speed rpm : 450...490

TORQUE CONTROL

Dimension a mm : 0.55
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 11.30...11.40
2nd speed rpm : 1080
Rack travel in m: 11.20...11.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 10.30...10.40

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 9.80...10.00
2nd pressure hPa : 180
Rack travel in m: 10.10...10.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm³/ : 132.5...134.5
1000 s: (129.5...137.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.30
Speed rpm : 1125...1140

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 305.0...345.0
1000 s: (305.0...345.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.10...6.30

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 10,0q19
 Edition : 24.07.92
 Replaces : 03.91
 Test oil : ISO-4113
 Combination no. : 0 401 846 759
 Injection pump
 Pump designation : PE6P110A32ORS3108Y
 EP type number : 0 411 816 729
 Governor
 Governor design. : RQV250...1100PA920-1
 Governor no. : 0 421 815 778

Customer-spec. information
 Customer : VOLVO

Engine : THD100EC

1st version kW : 180.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.10...11.20

Del.quantity cm³/ : 13.8...14.0

100 s: (13.5...14.3)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 5.2...5.4

Del.quantity cm³/ : 3.0...3.4

100 s: (2.7...3.6)

Spread cm³ : 0.3

100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.10...1.30

2nd speed rpm : 500
 travel mm : 4.10...4.90

3rd speed rpm : 700
 travel mm : 6.30...6.70

4th speed rpm : 950
 travel mm : 6.30...6.70

5th speed rpm : 1100
 travel mm : 7.00...7.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1175

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 138.0...140.0

1000 : (135.0...143.0)

Spread cm³ : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 61...69

Testing:

1st rack travel in: 10.10
Speed rpm : 1160...1170
2nd rack travel in: 4.00
Speed rpm : 1225...1255
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 8...16

Testing:

Speed rpm : 100
Minimum rack travel: 6.70
Speed rpm : 250
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

Speed rpm : 250...425

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 11.10...11.20

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.60...9.80
2nd pressure hPa : 280
Rack travel in m: 9.80...9.90
3rd pressure hPa : 430
Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700
Del. quantity cm³/ : 106.0...108.0
1000 s: (103.0...111.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.10
Speed rpm : 1160...1170

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 170.0...200.0
1000 s: (166.0...204.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.20...5.40
Del. quantity cm³/ : 30.0...34.0
1000 s: (27.5...36.5)
Spread cm³ : 3.00
1000 s: (6.00)

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 10,0q20
 Edition : 03.07.92
 Replaces : 03.91
 Test oil : ISO-4113

Combination no. : 0 401 846 760

Injection pump
 Pump designation : PE6P110A32ORS3108X
 EP type number : 0 411 816 730
 Governor
 Governor design. : RQV250...1100PA920-2
 Governor no. : 0 421 813 779

Customer-spec. information
 Customer : VOLVO

Engine : THD100ED

1st version kW : 203.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10
 : (2.95...3.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.10...12.20

Del. quantity cm³/ : 16.0...16.2

100 s: (15.7...16.5)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 5.0...5.2

Del. quantity cm³/ : 3.0...3.4

100 s: (2.7...3.6)

Spread cm³ : 0.3

100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.10...1.30

2nd speed rpm : 500

travel mm : 4.10...4.90

3rd speed rpm : 700

travel mm : 6.30...6.70

4th speed rpm : 950

travel mm : 6.30...6.70

5th speed rpm : 1100

travel mm : 7.00...7.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1175

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del. quantity : 160.0...162.0

1000 : (157.0...165.0)

Spread cm³ : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 61...69

Testing:

1st rack travel in: 11.10
Speed rpm : 1160...1170
2nd rack travel in: 4.00
Speed rpm : 1225...1255
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 8...16

Testing:

Speed rpm : 100
Minimum rack travel: 6.70
Speed rpm : 250
Rack travel in mm : 5.00...5.20

CONSTANT REGULATION

Speed rpm : 250...425

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.10...12.20

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.30...9.40
2nd pressure hPa : 280
Rack travel in m: 9.50...9.60
3rd pressure hPa : 700
Rack travel in m: 11.70...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700
Del. quantity cm³/ : 106.0...108.0
1000 s: (103.0...111.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.10
Speed rpm : 1160...1170

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 170.0...200.0
1000 s: (166.0...204.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.00...5.20
Del. quantity cm³/ : 30.0...34.0
1000 s: (27.5...36.5)
Spread cm³ : 3.00
1000 s: (6.00)

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,2 e2
 Edition : 24.07.92
 Replaces : 03.91
 Test oil : ISO-4113

Combination no. : 0 401 846 852

Injection pump
 Pump designation : PE6P120A32ORS3118
 EP type number : 0 411 826 726
 Governor
 Governor design. : RQV250...1050PA921
 -10
 Governor no. : 0 421 813 793

Customer-spec. information

Customer : VOLVO

Engine : TD122FAQ,FGQ

1st version kw : 287.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70
 : (2.55...2.75)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.80...13.90

Del.quantity cm³/ : 23.5...23.7
 100 s: (23.2...24.0)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 250.0
 Rack travel in mm : 4.3...4.5
 Del.quantity cm³/ : 1.7...2.2
 100 s: (1.5...2.5)

Spread cm³ : 0.5
 100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.00...1.40

2nd speed rpm : 350
 travel mm : 2.20...2.80

3rd speed rpm : 700
 travel mm : 6.40...6.60

4th speed rpm : 1085
 travel mm : 8.40...8.60

5th speed rpm : 1160
 travel mm : 9.60...10.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1085
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700

Aneroid pressure h: 1000
Del. quantity : 235.0...237.0
1000 : (232.0...240.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:

1st rack travel in: 12.80
Speed rpm : 1080...1090
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 59...67

Testing:

Speed rpm : 100
Minimum rack travel: 5.90
Speed rpm : 250
Rack travel in mm : 4.30...4.50

CONSTANT REGULATION

Speed rpm : 250...350

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.80...13.90

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.00...10.20
2nd pressure hPa : 90
Rack travel in m: 10.20...10.30
3rd pressure hPa : 660
Rack travel in m: 13.30...13.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700

Del. quantity cm³/ : 149.0...151.0
1000 s: (146.0...154.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.80
Speed rpm : 1080...1090

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 240.0...280.0
1000 s: (236.0...284.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.30...4.50
Del. quantity cm³/ : 17.5...22.5
1000 s: (15.0...25.0)
Spread cm³ : 5.00
1000 s: (7.00)

Remarks:

:
Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,2 e3
Edition : 24.07.92
Replaces : 03.91
Test oil : ISO-4113
Combination no. : 0 401 846 853
Injection pump
Pump designation : PE6P120A320RS3118
EP type number : 0 411 826 726
Governor
Governor design. : RQV250...900PA921-11
Governor no. : 0 421 813 794

Customer-spec. information
Customer : VOLVO

Engine : TD122FBQ, FEQ

1st version kW : 287.0
Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70
: (2.55...2.75)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.80...13.90

Del.quantity cm3/ : 23.5...23.7

100 s: (23.2...24.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.3...4.5

Del.quantity cm3/ : 1.7...2.2

100 s: (1.5...2.5)

Spread cm3 : 0.5

100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 1.00...1.40

2nd speed rpm : 350
travel mm : 2.20...2.80

3rd speed rpm : 700
travel mm : 6.40...6.60

4th speed rpm : 935
travel mm : 7.60...7.80

5th speed rpm : 1015
travel mm : 8.90...9.30

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 980
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 1000

Del.quantity : 235.0...237.0
1000 : (232.0...240.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 113...121

Testing:
1st rack travel in: 12.80
Speed rpm : 930...940
2nd rack travel in: 4.00
Speed rpm : 1010...1040
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 59...67

Testing:
Speed rpm : 100
Minimum rack travel: 5.90
Speed rpm : 250
Rack travel in mm : 4.30...4.50

CONSTANT REGULATION

Speed rpm : 250...350

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.80...13.90

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.00...10.20
2nd pressure hPa : 90
Rack travel in m: 10.20...10.30
3rd pressure hPa : 660
Rack travel in m: 13.30...13.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm3/ : 149.0...151.0
1000 s: (146.0...154.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.80
Speed rpm : 930...940

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 240.0...280.0
1000 s: (236.0...284.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.30...4.50
Del.quantity cm3/ : 17.5...22.5
1000 s: (15.0...25.0)
Spread cm3 : 5.00
1000 s: (7.00)

Remarks:

:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,2 e4
 Edition : 24.07.92
 Replaces : 03.91
 Test oil : ISO-4113
 Combination no. : 0 401 846 854
 Injection pump
 Pump designation : PE6P120A320RS3118-1
 EP type number : 0 411 826 739
 Governor
 Governor design. : RQV250...850PA921-12
 Governor no. : 0 421 813 795

Customer-spec. information
 Customer : VOLVO

Engine : TD122FCQ

1st version kW : 287.0
 Rated speed : 1700

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70
 : (2.55...2.75)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 13.00...13.10
 Del.quantity cm3/ : 21.4...21.6
 100 s: (21.1...21.9)
 Spread cm3 : 0.5
 100 s: (0.9)

2nd speed rpm : 250.0
 Rack travel in mm : 4.3...4.5
 Del.quantity cm3/ : 1.7...2.2
 100 s: (1.5...2.5)
 Spread cm3 : 0.5
 100 s: (0.7)

**(B) Setting of injection pump
 with governor**

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.00...1.40
 2nd speed rpm : 350
 travel mm : 2.20...2.80
 3rd speed rpm : 700
 travel mm : 6.40...6.60
 4th speed rpm : 885
 travel mm : 7.60...7.80
 5th speed rpm : 955
 travel mm : 8.80...9.20

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 930
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 1000

Del.quantity : 214.0...216.0
1000 : (211.0...219.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 112...120

Testing:

1st rack travel in: 12.00
Speed rpm : 880...890
2nd rack travel in: 4.00
Speed rpm : 955...985
4th rack travel in: 1100
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 59...67

Testing:

Speed rpm : 100
Minimum rack travel: 5.90
Speed rpm : 250
Rack travel in mm : 4.30...4.50

CONSTANT REGULATION

Speed rpm : 250...350

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.00...13.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.00...10.20
2nd pressure hPa : 90
Rack travel in m: 10.20...10.30
3rd pressure hPa : 600
Rack travel in m: 12.50...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm3/ : 149.0...151.0
1000 s: (146.0...154.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.00
Speed rpm : 880...890

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 240.0...280.0
1000 s: (236.0...284.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.30...4.50
Del.quantity cm3/ : 17.5...22.5
1000 s: (15.0...25.0)
Spread cm3 : 5.00
1000 s: (7.00)

Remarks:

:
Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,2 e5
 Edition : 24.07.92
 Replaces : 12.91
 Test oil : ISO-4113
 Combination no. : 0 401 846 854HD
 Injection pump
 Pump designation : PE6P120A320RS3118-1
 EP type number : 0 411 826 739
 Governor
 Governor design. : RQV250...850PA921-12
 Governor no. : 0 421 813 795

Customer-spec. information
 Customer : VOLVO-TRUCK

Engine : TD122FCQ

1st version kW : 287.0
 Rated speed : 1700

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 019

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70
 : (2.55...2.75)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 21.4...21.6

100 s: (21.1...21.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.3...4.5

Del.quantity cm3/ : 1.7...2.2

100 s: (1.5...2.5)

Spread cm3 : 0.5

100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.00...1.40

2nd speed rpm : 350
 travel mm : 2.20...2.80

3rd speed rpm : 700
 travel mm : 6.40...6.60

4th speed rpm : 885
 travel mm : 7.60...7.80

5th speed rpm : 955
 travel mm : 8.80...9.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 930

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 214.0...216.0
1000 : (211.0...219.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 112...120

Testing:

1st rack travel in: 12.00
Speed rpm : 880...890
2nd rack travel in: 4.00
Speed rpm : 955...985
4th rack travel in: 1100
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 59...67

Testing:

Speed rpm : 100
Minimum rack travel: 5.90
Speed rpm : 250
Rack travel in mm : 4.30...4.50

CONSTANT REGULATION

Speed rpm : 250...350

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.00...13.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.00...10.20
2nd pressure hPa : 90
Rack travel in m: 10.20...10.30
3rd pressure hPa : 600
Rack travel in m: 12.50...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm³/ : 149.0...151.0
1000 s: (146.0...154.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.00
Speed rpm : 880...890

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 240.0...280.0
1000 s: (236.0...284.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.30...4.50
Del.quantity cm³/ : 17.5...22.5
1000 s: (15.0...25.0)
Spread cm³ : 5.00
1000 s: (7.00)

Remarks:

:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,2 i1
 Edition : 24.07.92
 Replaces : 03.91
 Test oil : ISO-4113

Combination no. : 0 401 846 869

Injection pump
 Pump designation : PE6P120A320RS3118
 EP type number : 0 411 826 726
 Governor
 Governor design. : RQV250...1100PA920-5
 Governor no. : 0 421 813 782

Customer-spec. information

Customer : VOLVO

Engine : THD 102 KD

1st version kW : 250.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 019

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70
 : (2.55...2.75)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.70...12.80

Del. quantity cm³/ : 22.2...22.4
 100 s: (21.9...22.7)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 250.0
 Rack travel in mm : 4.4...4.6
 Del. quantity cm³/ : 2.9...3.4
 100 s: (2.7...3.7)

Spread cm³ : 0.5
 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.10...1.30

2nd speed rpm : 500
 travel mm : 4.10...4.90

3rd speed rpm : 700
 travel mm : 6.30...6.70

4th speed rpm : 950
 travel mm : 6.30...6.70

5th speed rpm : 1100
 travel mm : 7.00...7.50

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1175
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 1200

Del.quantity : 222.0...224.0
1000 : (219.0...227.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 112...120

Testing:

1st rack travel in: 11.70
Speed rpm : 1130...1140
2nd rack travel in: 4.00
Speed rpm : 1210...1240
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 63...71

Testing:

Speed rpm : 100
Minimum rack travel: 6.00
Speed rpm : 250
Rack travel in mm : 4.40...4.60

CONSTANT REGULATION

Speed rpm : 250...420

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 12.70...12.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.40...8.60
2nd pressure hPa : 160
Rack travel in m: 8.60...8.70
3rd pressure hPa : 810
Rack travel in m: 12.20...12.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm³/ : 133.0...135.0
1000 s: (130.0...138.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1130...1140

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 230.0...270.0
1000 s: (226.0...274.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.40...4.60
Del.quantity cm³/ : 29.5...34.5
1000 s: (27.0...37.0)
Spread cm³ : 5.00
1000 s: (7.00)

Remarks:

:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 10,0 y7
 Edition : 24.07.92
 Replaces : 03.91
 Test oil : ISO-4113
 Combination no. : 0 401 846 890
 Injection pump
 Pump designation : PE6P110A32ORS3080-3
 EP type number : 0 411 816 758
 Governor
 Governor design. : RQV250...950PA921-15
 Governor no. : 0 421 813 798

Customer-spec. information
 Customer : VOLVO

Engine : TD102FH

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test lines : 1 680 750 015
 Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 3.00...3.10
 : (2.95...3.15)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.60...12.70

Del. quantity cm³/ : 17.9...18.1

100 s: (17.6...18.4)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 3.8...4.0

Del. quantity cm³/ : 1.5...1.9

100 s: (1.2...2.1)

Spread cm³ : 0.3

100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.40

2nd speed rpm : 350

travel mm : 2.20...2.80

3rd speed rpm : 750

travel mm : 6.30...6.70

4th speed rpm : 985

travel mm : 8.20...8.40

5th speed rpm : 1060

travel mm : 9.10...9.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 985

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del. quantity : 179.0...181.0

1000 : (176.0...184.0)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 11.60
Speed rpm : 980...990
2nd rack travel in: 4.00
Speed rpm : 1040...1070
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 59...67

Testing:
Speed rpm : 100
Minimum rack travel: 5.30
Speed rpm : 250
Rack travel in mm : 3.80...4.00

CONSTANT REGULATION
Speed rpm : 250...360

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.60...12.70

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.90...10.10
2nd pressure hPa : 140
Rack travel in m: 10.10...10.20
3rd pressure hPa : 500
Rack travel in m: 12.10...12.30

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm3/ : 130.0...132.0
1000 s: (127.0...135.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.60
Speed rpm : 980...990

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 160.0...190.0
1000 s: (156.0...194.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 3.80...4.00
Del.quantity cm3/ : 15.0...19.0
1000 s: (12.5...21.5)
Spread cm3 : 3.00
1000 s: (6.00)

Remarks:

:
Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,0 x
 Edition : 21.05.92
 Replaces : 01.92
 Test oil : ISO-4113

Combination no. : 0 401 846 910

Injection pump
 Pump designation : PE6P110A320LS3851
 EP type number : 0 411 816 765
 Governor
 Governor design. : PG300/1050PA187-26
 Governor no. : 0 421 801 489

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM441

1st version kw : 160.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow quantity min. 1/h: 100...120

Test nozzle holder assembly : 1 688 901 101

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
 : (4.35...4.55)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.20...11.30

Del.quantity cm³/ : 12.2...12.4

100 s: (11.9...12.6)

Spread cm³ : 0.8

100 s: (1.3)

2nd speed rpm : 300.0

Rack travel in mm : 6.5...7.1

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.4)

Spread cm³ : 0.6

100 s: (1.1)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 13.10...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 122.0...124.0

1000 : (119.5...126.5)

Spread cm³ : 8.50

1000 : (13.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 13.5

Testing:

1st rack travel in: 10.20
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1300
Speed rpm : 0.00...2.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.8

Testing:

Speed rpm : 200
Minimum rack trave: 8.50
Speed rpm : 300
Rack travel in mm : 6.50...7.10
Rack travel in mm : 2.00
Speed rpm : 390...430

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm³/ : 119.0...125.0
1000 s: (116.5...127.5)
Spread cm³ : 11.00
1000 s: (14.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 10.20
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...150.0
1000 s: (126.0...154.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,0 w
 Edition : 21.05.92
 Replaces : 01.92
 Test oil : ISO-4113
 Combination no. : 0 401 846 918
 Injection pump
 Pump designation : PE6P110A320LS3851
 EP type number : 0 411 816 765
 Governor
 Governor design. : RQV300...1050PA884-6
 Governor no. : 0 421 813 832

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM441

1st version kw : 160.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
 : (4.35...4.55)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050
 Rack travel in mm : 11.20...11.30
 Del. quantity cm³/ : 12.2...12.4
 100 s: (11.9...12.6)
 Spread cm³ : 0.8
 100 s: (1.3)

2nd speed rpm : 300.0
 Rack travel in mm : 6.5...7.1
 Del. quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.4)
 Spread cm³ : 0.6
 100 s: (1.1)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.50...1.00
 2nd speed rpm : 460
 travel mm : 2.70...3.20
 3rd speed rpm : 738
 travel mm : 4.60...5.10
 4th speed rpm : 1107
 travel mm : 7.90...8.40
 5th speed rpm : 1370
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1225
 Rack travel in mm : 8.90...11.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Del.quantity : 122.0...124.0
1000 : (119.5...126.5)
Spread cm³ : 8.50
1000 : (13.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:

1st rack travel in: 10.20
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 83...91

Testing:

Speed rpm : 200
Minimum rack trave: 8.50
Speed rpm : 300
Rack travel in mm : 6.50...7.10

CONSTANT REGULATION

Speed rpm : 300...500

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm³/ : 119.0...125.0
1000 s: (116.5...127.5)
Spread cm³ : 11.00
1000 s: (14.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...150.0
1000 s: (126.0...154.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,2 e
 Edition : 24.07.92
 Replaces : 12.89
 Test oil : ISO-4113
 Combination no. : 0 401 846 919
 Injection pump
 Pump designation : PE6P120A32ORS3118-7
 EP type number : 0 411 826 790
 Governor
 Governor design. : RQV250...950PA921-20
 Governor no. : 0 421 813 838

Customer-spec. information
 Customer : VOLVO-TRUCK

Engine : TD122FTQ S

1st version kw : 221.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70
 : (2.55...2.75)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 12.20...12.30
 Del.quantity cm3/ : 19.4...19.6
 100 s: (19.1...19.9)
 Spread cm3 : 0.5
 100 s: (0.9)

2nd speed rpm : 250.0
 Rack travel in mm : 4.3...4.5
 Del.quantity cm3/ : 1.7...2.2
 100 s: (1.5...2.5)
 Spread cm3 : 0.5
 100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.00...1.40
 2nd speed rpm : 350
 travel mm : 2.20...2.80
 3rd speed rpm : 750
 travel mm : 6.30...6.70
 4th speed rpm : 995
 travel mm : 8.20...8.40
 5th speed rpm : 1060
 travel mm : 9.30...9.70

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 990
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 1000

Del.quantity : 194.0...196.0
1000 : (191.0...199.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 115...123

Testing:

1st rack travel in: 11.20
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1050...1080
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 58...66

Testing:

Speed rpm : 100
Minimum rack travel: 5.90
Speed rpm : 250
Rack travel in mm : 4.30...4.50

CONSTANT REGULATION

Speed rpm : 250...350

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 12.20...12.30

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.00...10.20
2nd pressure hPa : 90
Rack travel in m: 10.20...10.30
3rd pressure hPa : 440
Rack travel in m: 11.70...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm³/ : 149.0...151.0
1000 s: (146.0...154.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.20
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 240.0...280.0
1000 s: (236.0...284.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.30...4.50
Del.quantity cm³/ : 17.5...22.5
1000 s: (15.0...25.0)
Spread cm³ : 5.00
1000 s: (7.00)

Remarks:

:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,2 e1
 Edition : 24.07.92
 Replaces : 12.89
 Test oil : ISO-4113

Combination no. : 0 401 846 920

Injection pump
 Pump designation : PE6P120A32ORS3118-8
 EP type number : 0 411 826 791
 Governor
 Governor design. : RQV250...950PA921-21
 Governor no. : 0 421 813 839

Customer-spec. information
 Customer : VOLVO-TRUCK

Engine : TD122FKQ

1st version kW : 254.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70
 : (2.55...2.75)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.60...13.70

Del.quantity cm3/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.0...4.2

Del.quantity cm3/ : 1.7...2.2

100 s: (1.5...2.5)

Spread cm3 : 0.5

100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.00...1.40

2nd speed rpm : 350
 travel mm : 2.20...2.80

3rd speed rpm : 750
 travel mm : 6.30...6.70

4th speed rpm : 995
 travel mm : 8.20...8.40

5th speed rpm : 1060
 travel mm : 9.30...9.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 990

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 234.0...236.0
1000 : (231.0...239.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:

1st rack travel in: 12.60
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1050...1080
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 58...66

Testing:

Speed rpm : 100
Minimum rack travel: 5.60
Speed rpm : 250
Rack travel in mm : 4.00...4.20

CONSTANT REGULATION

Speed rpm : 250...350

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.60...13.70

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.60...9.80
2nd pressure hPa : 90
Rack travel in m: 9.80...9.90
3rd pressure hPa : 800
Rack travel in m: 13.10...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm³/ : 149.0...151.0
1000 s: (146.0...154.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.60
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 240.0...280.0
1000 s: (236.0...284.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.00...4.20
Del.quantity cm³/ : 17.5...22.5
1000 s: (15.0...25.0)
Spread cm³ : 5.00
1000 s: (7.00)

Remarks:

:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 10,2 a
 Edition : 24.07.92
 Replaces : 07.91
 Test oil : ISO-4113
 Combination no. : 0 401 846 935
 Injection pump
 Pump designation : PE6P120A32ORS3262
 EP type number : 0 411 826 797
 Governor
 Governor design. : RQV300...1050PA232-4
 Governor no. : 0 421 813 883

Customer-spec. information

Customer : VOLVO
 Engine : TD102 GC

1st version kW : 180.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder assembly : 1 688 901 019
 Opening pressure, bar : 207...210
 Orifice plate diameter mm : 0,8
 Test lines : 1 680 750 067

Outside diameter x Wall thickness x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 9.40...9.50
 Del.quantity cm³/ : 17.4...17.6
 100 s: (17.1...17.9)
 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.3...5.5
 Del.quantity cm³/ : 3.2...3.7
 100 s: (2.9...3.9)
 Spread cm³ : 0.5
 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.30...1.70
 2nd speed rpm : 500
 travel mm : 2.70...3.30
 3rd speed rpm : 800
 travel mm : 4.90...5.50
 4th speed rpm : 1100
 travel mm : 7.60...7.70
 5th speed rpm : 1180
 travel mm : 8.80...9.20

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1150
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 900

Del.quantity : 174.0...176.0
1000 : (171.0...179.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 108...116

Testing:
1st rack travel in: 8.40
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 80...88

Testing:
Speed rpm : 100
Minimum rack travel: 6.90
Speed rpm : 300
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION
Speed rpm : 300...410

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 9.40...9.50

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.10...9.30
2nd pressure hPa : 170
Rack travel in m: 9.30...9.40

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm3/ : 171.0...173.0
1000 s: (168.0...176.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.40
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 160.0...190.0
1000 s: (156.0...194.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.30...5.50
Del.quantity cm3/ : 32.0...37.0
1000 s: (29.5...39.5)
Spread cm3 : 5.00
1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 5,9 b
 Edition : 24.07.92
 Replaces : 12.91
 Test oil : ISO-4113

Combination no. : 0 401 846 937

Injection pump
 Pump designation : PE6P110A320RS3266
 EP type number : 0 411 816 777
 Governor
 Governor design. : RQV300...1300PA996K
 Governor no. : 0 421 815 277

Customer-spec. information
 Customer : VOLVO-TRUCK

Engine : TD63ES

1st version kW : 155.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.40...2.50
 : (2.30...2.50)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 780

Rack travel in mm : 11.90...12.00

Del.quantity cm³/ : 13.9...14.1

100 s: (13.7...14.3)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 330.0

Rack travel in mm : 5.4...5.6

Del.quantity cm³/ : 1.7...2.1

100 s: (1.4...2.4)

Spread cm³ : 0.7

100 s: (1.1)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 330
 travel mm : 1.20...1.60

2nd speed rpm : 500
 travel mm : 2.90...3.50

3rd speed rpm : 900
 travel mm : 4.70...5.30

4th speed rpm : 1370
 travel mm : 9.80...10.00

5th speed rpm : 1450
 travel mm : 11.00...11.40

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1470
 Rack travel in mm : 6.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 780
 Aneroid pressure h: 1200

Del.quantity : 139.0...141.0
1000 : (137.0...143.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:

1st rack travel in: 11.20
Speed rpm : 1360...1370
2nd rack travel in: 4.00
Speed rpm : 1430...1460
4th rack travel in: 1520
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 70...78

Testing:

Speed rpm : 100
Minimum rack travel: 7.00
Speed rpm : 330
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

Speed rpm : 330...600

TORQUE CONTROL

Dimension a mm : 0.30
Torque control curve - 1st version
1st speed rpm : 780
Rack travel in m: 11.90...12.00
2nd speed rpm : 1300
Rack travel in m: 12.20...12.40

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 1300
Pressure hPa : 1200
Rack travel mm : 12.20...12.40

Measurement

Speed 1/min : 1300

1st pressure hPa : -
Rack travel in m: 8.50...8.70
2nd pressure hPa : 110
Rack travel in m: 8.70...8.80
3rd pressure hPa : 750
Rack travel in m: 11.40...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1300
Del.quantity cm³/ : 130.0...134.0
1000 s: (127.0...137.0)
Spread cm³ : 8.00
1000 s: (12.)
Aneroid pressure h: -
Speed rpm : 780
Del.quantity cm³/ : 73.0...75.0
1000 s: (70.0...78.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.20
Speed rpm : 1360...1370

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 65.0...85.0
1000 s: (61.0...89.0)
Rack travel in mm : 8.50...8.70

LOW IDLE

Speed rpm : 330
Rack travel in mm : 5.40...5.60
Del.quantity cm³/ : 17.0...21.0
1000 s: (14.0...24.0)
Spread cm³ : 7.00
1000 s: (11.00)

Remarks:

:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

Start-of-delivery setting with ROBO
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 5,9 b 1
 Edition : 24.07.92
 Replaces : 02.92
 Test oil : ISO-4113

Combination no. : 0 401 846 938

Injection pump
 Pump designation : PE6P110A32ORS3266
 EP type number : 0 412 816 777
 Governor
 Governor design. : RQV300...1300PA996-1
 K
 Governor no. : 0 421 815 278

Customer-spec. information
 Customer : VOLVO-TRUCK

Engine : TD63E

1st version kw : 133.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.40...2.50
 : (2.30...2.50)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 780

Rack travel in mm : 10.30...10.40

Del.quantity cm³/ : 10.2...10.4
 100 s : (10.0...10.6)

Spread cm³ : 0.5
 100 s : (0.9)

2nd speed rpm : 330.0
 Rack travel in mm : 5.4...5.6
 Del.quantity cm³/ : 1.7...2.1
 100 s : (1.4...2.4)

Spread cm³ : 0.7
 100 s : (1.1)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 330
 travel mm : 1.20...1.60

2nd speed rpm : 500
 travel mm : 2.90...3.50

3rd speed rpm : 900
 travel mm : 4.70...5.30

4th speed rpm : 1370
 travel mm : 9.80...10.00

5th speed rpm : 1450
 travel mm : 11.00...11.40

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1470
 Rack travel in mm : 6.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 780

Aneroid pressure h: 1200
Del.quantity : 102.0...104.0
1000 : (100.0...106.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:

1st rack travel in: 10.20
Speed rpm : 1360...1370
2nd rack travel in: 4.00
Speed rpm : 1420...1450
4th rack travel in: 1520
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 70...78

Testing:

Speed rpm : 100
Minimum rack trave: 7.00
Speed rpm : 330
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

Speed rpm : 330...600

TORQUE CONTROL

Dimension a mm : 0.90
Torque control curve - 1st version
1st speed rpm : 780
Rack travel in m: 10.30...10.40
2nd speed rpm : 1050
Rack travel in m: 10.80...11.00
3rd speed rpm : 1300
Rack travel in m: 11.20...11.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1300
Pressure hPa : 1200
Rack travel mm : 11.20...11.40

Measurement

Speed 1/min : 1300

1st pressure hPa : -
Rack travel in m: 8.50...8.70
2nd pressure hPa : 140
Rack travel in m: 8.70...8.80

3rd pressure hPa : 650
Rack travel in m: 10.80...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm3/ : 114.0...118.0
1000 s: (111.0...121.0)
Spread cm3 : 8.00
1000 s: (12.0)

Aneroid pressure h: 1200
Speed rpm : 1300
Del.quantity cm3/ : 118.0...124.0
1000 s: (115.0...127.0)

Aneroid pressure h: -
Speed rpm : 780
Del.quantity cm3/ : 73.0...75.0
1000 s: (70.0...78.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 10.20
Speed rpm : 1360...1370

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 65.0...85.0
1000 s: (61.0...89.0)
Rack travel in mm : 8.50...8.70

LOW IDLE

Speed rpm : 330
Rack travel in mm : 5.40...5.60
Del.quantity cm3/ : 17.0...21.0
1000 s: (14.0...24.0)
Spread cm3 : 7.00
1000 s: (11.00)

Remarks:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

Start-of-delivery setting with ROBO
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,2 L
 Edition : 21.05.92
 Replaces : 11.91
 Test oil : ISO-4113

Combination no. : 0 401 846 951

Injection pump
 Pump designation : PE6P120A32ORS3240
 EP type number : 0 411 826 786
 Governor
 Governor design. : RQV250...1175PA371-2
 Governor no. : 0 421 813 945

Customer-spec. information
 Customer : VOLVO-TRUCK

Engine : TD122FS

1st version kW : 309.0
 Rated speed : 2350

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,3

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.30...13.40

Del.quantity cm³/ : 24.0...24.2

100 s : (23.7...24.5)

Spread cm³ : 0.5

100 s : (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.9...5.1

Del.quantity cm³/ : 2.7...3.2

100 s : (2.5...3.5)

Spread cm³ : 0.5

100 s : (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.40

2nd speed rpm : 450

travel mm : 2.40...3.00

3rd speed rpm : 800

travel mm : 4.40...5.00

4th speed rpm : 1240

travel mm : 8.50...8.70

5th speed rpm : 1350

travel mm : 9.80...10.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1240

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 240.0...242.0
1000 : (237.0...245.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 104...112

Testing:

1st rack travel in: 12.30
Speed rpm : 1230...1240
2nd rack travel in: 4.00
Speed rpm : 1320...1350
4th rack travel in: 1420
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 68...76

Testing:

Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 250
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 250...340

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.30...13.40

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.20...10.40
2nd pressure hPa : 280
Rack travel in m: 10.40...10.50
3rd pressure hPa : 840
Rack travel in m: 12.80...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm³/ : 160.0...162.0
1000 s: (157.0...165.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.30
Speed rpm : 1230...1240

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 270.0...310.0
1000 s: (266.0...314.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.90...5.10
Del.quantity cm³/ : 27.5...32.5
1000 s: (25.0...35.0)
Spread cm³ : 5.00
1000 s: (7.00)

Remarks:

:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

Start-of-delivery setting with ROBO
diaphragm.

APPLICATION

Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA
 Edition : 21.05.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 846 965
 Injection pump
 Pump designation : PE6P110A72ORS3115
 EP type number : 0 411 816 735
 Governor
 Governor design. : RQV250...1100PA468-2
 Governor no. : 0 421 814 006

Customer-spec. information
 Customer : SCANIA

Engine : DN11 08

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.30...3.40
 : (3.25...3.45)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.70...11.80

Del. quantity cm³/ : 10.4...10.6

100 s: (10.2...10.8)

Spread cm³ : 0.5

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 4.4...4.8

Del. quantity cm³/ : 1.2...1.6

100 s: (-)

Spread cm³ : 0.2

100 s: (0.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.20...1.60

2nd speed rpm : 350

travel mm : 2.40...3.00

3rd speed rpm : 650

travel mm : 4.60...5.20

4th speed rpm : 1145

travel mm : 8.60...8.80

5th speed rpm : 1255

travel mm : 9.70...10.10

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1125

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del. quantity : 104.0...106.0

1000 : (102.0...108.0)

Spread cm³ : 5.00

1000 : (7.00)

RATED SPEED

1st version
Control lever
position degrees: 113...121

Testing:
1st rack travel in: 10.70
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1240...1270
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 62...70

Testing:
Speed rpm : 100
Minimum rack trave: 6.00
Speed rpm : 250
Rack travel in mm : 4.40...4.60
Rack travel in mm : 2.00
Speed rpm : 360...420

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 1100
Del.quantity cm³/ : 110.5...115.5
1000 s: (108.0...118.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.70
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 11.70...11.80

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.40...4.60

Remarks:

:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Start-of-delivery setting with ROBO

D02

diaphragm.
APPLICATION
Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
 Edition : 31.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 846 966
 Injection pump
 Pump designation : PE6P110A72ORS3225
 EP type number : 0 411 816 763
 Governor
 Governor design. : RQV275...1050PA910-2
 Governor no. : 0 421 814 012

Customer-spec. information

Customer : DAF
 Engine : HT 168 A

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test Lines : 1 680 750 089
 Outside diameter
 x wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 3.70...3.80
 : (3.65...3.85)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000
 Rack travel in mm : 12.30...12.40
 Del. quantity cm³/ : 12.0...12.2
 100 s: (11.7...12.5)
 Spread cm³ : 0.4
 100 s: (0.7)
 2nd speed rpm : 275.0
 Rack travel in mm : 7.2...7.4
 Del. quantity cm³/ : 1.4...1.9
 100 s: (1.1...2.1)
 Spread cm³ : 0.4
 100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275
 travel mm : 1.20...1.60
 2nd speed rpm : 375
 travel mm : 2.80...3.30
 3rd speed rpm : 450
 travel mm : 3.50...4.00
 4th speed rpm : 1000
 travel mm : 7.00...7.40
 5th speed rpm : 1090
 travel mm : 8.00...8.20

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1180
 Rack travel in mm : 10.00...12.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1000
 Aneroid pressure h: 1000
 Del. quantity : 120.0...122.0
 1000 : (117.5...125.5)
 Spread cm³ : 4.00
 1000 : (7.50)

RATED SPEED

1st version

Control lever
position degrees: 115...123

Testing:

1st rack travel in: 11.30
Speed rpm : 1070...1080
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1260
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 79...87

Testing:

Speed rpm : 175
Minimum rack travel: 7.40
Speed rpm : 275
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

Speed rpm : 275...425

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 12.30...12.40

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 10.80...10.90
2nd pressure hPa : 400
Rack travel in m: 12.00...12.10
3rd pressure hPa : 320
Rack travel in m: 11.50...11.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 600
Del. quantity cm³/ : 83.5...85.5
1000 s: (81.0...88.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30

D04

Speed rpm : 1070...1080

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.70...4.90

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 03.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 846 967
 Injection pump
 Pump designation : PE6P110A320LS3851-2
 EP type number : 0 411 816 785
 Governor
 Governor design. : RQV300...1050PA378
 -12
 Governor no. : 0 421 814 016

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM441

1st version kW : 151.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
 : (4.35...4.55)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.20...12.30

Del. quantity cm³/ : 11.8...12.0
 100 s: (11.5...12.2)

Spread cm³ : 0.8
 100 s: (1.3)

2nd speed rpm : 350.0
 Rack travel in mm : 7.1...7.7
 Del. quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.4)
 Spread cm³ : 0.6
 100 s: (1.1)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.30...1.80
 2nd speed rpm : 430
 travel mm : 2.90...3.40
 3rd speed rpm : 590
 travel mm : 3.90...4.40
 4th speed rpm : 880
 travel mm : 5.70...6.10
 5th speed rpm : 1160
 travel mm : 9.80...10.20

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1130
 Rack travel in mm : 9.90...12.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Del.quantity : 118.0...120.0
1000 : (115.5...122.5)
Spread cm³ : 8.50
1000 : (13.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:

1st rack travel in: 11.20
Speed rpm : 1050...1100
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1300
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 67...75

Testing:

Speed rpm : 250
Minimum rack travel: 10.00
Speed rpm : 350

CONSTANT REGULATION

Speed rpm : 350...450

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm³/ : 119.0...125.0
1000 s: (116.5...127.5)
Spread cm³ : 11.00
1000 s: (14.0)
Speed rpm : 1050
Del.quantity cm³/ : 88.0...90.0 *
1000 s: (85.5...92.5)
Spread cm³ : 11.00
1000 s: (14.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.20

D06

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...150.0
1000 s: (126.0...154.0)

Remarks:

* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 848 824
 Injection pump
 Pump designation : PE8P110A320LS3842
 EP type number : 0 411 818 714
 Governor
 Governor design. : RQ300/1050PA1025
 Governor no. : 0 421 801 635

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442

1st version kW : 218.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10
 : (3.95...4.15)
 Rack travel in mm : 9.00...12.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 750
 Rack travel in mm : 12.70...12.80
 Del. quantity cm³/ : 12.6...12.8
 100 s: (12.3...13.0)
 Spread cm³ : 0.4
 100 s: (0.7)

2nd speed rpm : 300.0
 Rack travel in mm : 8.2...8.5
 Del. quantity cm³/ : 1.5...2.1
 100 s: (1.2...2.3)
 Spread cm³ : 0.4
 100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 650
 Rack travel in mm : 13.60...14.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 750
 Del. quantity : 126.0...128.0
 1000 : (123.5...130.5)
 Spread cm³ : 4.00
 1000 : (7.50)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 650
 Rack travel in mm : 14.0

Testing:
 1st rack travel in: 11.70

Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1145...1175
4th rack travel in: 1350
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.9

Testing:

Speed rpm : 200
Minimum rack travel: 8.50
Speed rpm : 300
Rack travel in mm : 6.80...7.00
Rack travel in mm : 2.00
Speed rpm : 400...440

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 750
Pressure hPa : 1100
Rack travel mm : 12.70...12.80

Measurement

Speed 1/min : 750

1st pressure hPa : 910
Rack travel in m: 12.40...12.60
2nd pressure hPa : 760
Rack travel in m: 10.60...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1050
Del.quantity cm³/ : 136.0...140.0
1000 s: (133.0...143.0)
Spread cm³ : 7.00
1000 s: (10.0)

RACK STOP ADJUSTMENT

Speed rpm : 600

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...160.0
1000 s: (136.0...164.0)

Remarks:

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BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 849 744A
 Injection pump
 Pump designation : PE10P120A52D/4LS3849
 EP type number : 0 411 829 708
 Governor
 Governor design. : RQ750PA663-7
 Governor no. : 0 421 801 331

Customer-spec. information
 Customer : MAN

Engine : D2840 LE

1st version kW : 405.0
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30
 : (4.15...4.35)
 Rack travel in mm : 9.00...12.00
 Firing order : 10- 9- 4- 1- 8- 7-
 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-
 216-261-288-333
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.50...12.60

Del.quantity cm³/ : 23.6...23.8

100 s: (23.3...24.1)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 4.5...4.9
 Del.quantity cm³/ : 1.7...2.3
 100 s: (1.4...2.6)
 Spread cm³ : 0.8
 100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 850
 Del.quantity : 236.0...238.0
 1000 : (233.0...241.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Testing:
 1st rack travel in: 11.50
 Speed rpm : 900...905
 2nd rack travel in: 4.00
 Speed rpm : 940...955
 4th rack travel in: 1050
 Speed rpm : 0.00...1.00

Remarks: : MAN-NR. 2-7976

APPLICATION

Generator set



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 849 754
 Injection pump
 Pump designation : PE10P110A320LS3844
 EP type number : 0 411 819 710
 Governor
 Governor design. : RQ300/1050PA1025-1
 Governor no. : 0 421 801 636

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 443

1st version kW : 271.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 130...150

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10
 : (3.95...4.15)
 Rack travel in mm : 9.00...12.00
 Firing order : 10- 9- 4- 1- 8- 7
 - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-
 216-261-288-333
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 12.3...12.5

100 s: (12.0...12.7)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 8.0...8.3

Del.quantity cm3/ : 1.5...2.1

100 s: (1.2...2.3)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 13.60...14.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del.quantity : 123.0...125.0

1000 : (120.5...127.5)

Spread cm3 : 4.00

1000 : (8.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 14.0

Testing:

1st rack travel in: 11.50

Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1145...1175
4th rack travel in: 1300
Speed rpm : 0.00...1.40

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.9

Testing:
Speed rpm : 200
Minimum rack trave: 8.50
Speed rpm : 300
Rack travel in mm : 6.80...7.00
Rack travel in mm : 2.00
Speed rpm : 400...440

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 750
Pressure hPa : 1000
Rack travel mm : 12.50...12.60

Measurement
Speed 1/min : 750

1st pressure hPa : 910
Rack travel in m: 12.20...12.40
2nd pressure hPa : 760
Rack travel in m: 10.40...10.70

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 1050
Del.quantity cm3/ : 134.0...138.0
1000 s: (131.0...141.0)
Spread cm3 : 6.00
1000 s: (9.00)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.50
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100

D12

Del.quantity cm3/ : 140.0...160.0
1000 s: (136.0...164.0)

Remarks:

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BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : HAF
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 856 159
 Injection pump
 Pump designation : PE6P110A721RS369
 EP type number : 0 411 816 121
 Governor
 Governor design. : RQ300/1300PA412-6
 Governor no. : 0 421 801 638

Customer-spec. information
 Customer : HAEP

Engine : WD615.60

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 14.10...14.20

Del. quantity cm³/ : 14.6...14.8

100 s : (14.3...15.0)

Spread cm³ : 0.4

100 s : (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 8.8...9.2

Del. quantity cm³/ : 1.8...2.4

100 s : (1.5...2.6)

Spread cm³ : 0.4

100 s : (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.40...16.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del. quantity : 146.0...148.0

1000 : (143.5...150.5)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

Testing:

1st rack travel in: 13.10

Speed rpm : 1345...1360

2nd rack travel in: 4.00

Speed rpm : 1425...1455

4th rack travel in: 1550

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.0

Testing:

Speed rpm : 100

Minimum rack travel: 7.40

Speed rpm : 300

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 400...440

TORQUE CONTROL

Dimension a mm : 0.40

Torque control curve - 1st version

1st speed rpm : 1300

Rack travel in m: 14.10...14.20

2nd speed rpm : 700

Rack travel in m: 14.60...15.00

3rd speed rpm : 900

Rack travel in m: 14.50...14.70

4th speed rpm : 1100

Rack travel in m: 14.30...14.50

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 700

Pressure hPa : 700

Rack travel mm : 14.30...14.50

Measurement

Speed 1/min : 700

1st pressure hPa : -

Rack travel in m: 12.40...12.60

2nd pressure hPa : 310

Rack travel in m: 14.10...14.20

3rd pressure hPa : 205

Rack travel in m: 12.70...12.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm : 700

Del.quantity cm³/ : 135.0...139.0

1000 s: (132.0...142.0)

Aneroid pressure h: -

Speed rpm : 700

Del.quantity cm³/ : 101.0...103.0

1000 s: (98.5...105.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.10

Speed rpm : 1345...1360

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 135.0...155.0

1000 s: (131.0...159.0)

Rack travel in mm : 16.50...17.50

Remarks:

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BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : HAE
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 856 706
 Injection pump
 Pump designation : PE6P110A721RS3101
 EP type number : 0 411 816 725
 Governor
 Governor design. : RQ300/1200PA412-7
 Governor no. : 0 421 801 639

Customer-spec. information
 Customer : HAEP

Engine : WD615.67

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test lines : 1 680 750 089
 Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200
 Rack travel in mm : 11.50...11.60
 Del. quantity cm³/ : 16.2...16.4
 100 s : (15.9...16.7)
 Spread cm³ : 0.4
 100 s : (0.7)

2nd speed rpm : 300.0
 Rack travel in mm : 5.5...5.9
 Del. quantity cm³/ : 1.2...1.8
 100 s : (0.9...2.0)
 Spread cm³ : 0.4
 100 s : (0.7)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 600
 Rack travel in mm : 15.40...16.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1200
 Aneroid pressure h: 700
 Del. quantity : 162.0...164.0
 1000 : (159.0...167.0)
 Spread cm³ : 4.00
 1000 : (7.50)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600
 Rack travel in mm : 16.0

Testing:
 1st rack travel in: 10.50
 Speed rpm : 1245...1260
 2nd rack travel in: 4.00
 Speed rpm : 1315...1345
 4th rack travel in: 1450
 Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 5.7

Testing:

Speed rpm : 100

Minimum rack trave: 7.20

Speed rpm : 300

Rack travel in mm : 5.60...5.80

Rack travel in mm : 2.00

Speed rpm : 405...445

TORQUE CONTROL

Dimension a mm : 0.35

Torque control curve - 1st version

1st speed rpm : 1200

Rack travel in m: 11.50...11.60

2nd speed rpm : 600

Rack travel in m: 12.10...12.40

3rd speed rpm : 985

Rack travel in m: 11.90...12.10

4th speed rpm : 1075

Rack travel in m: 11.70...11.90

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 700

Pressure hPa : 700

Rack travel mm : 11.90...12.10

Measurement

Speed 1/min : 700

1st pressure hPa : -

Rack travel in m: 9.10...9.30

2nd pressure hPa : 420

Rack travel in m: 11.00...11.10

3rd pressure hPa : 330

Rack travel in m: 9.80...10.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm : 700

Del.quantity cm3/ : 165.0...169.0

1000 s: (163.0...171.0)

Aneroid pressure h: -

Speed rpm : 700

Del.quantity cm3/ : 112.0...114.0

1000 s: (109.5...116.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.50

Speed rpm : 1245...1260

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 205.0...235.0

1000 s: (201.0...239.0)

Rack travel in mm : 18.50...19.50

Remarks:

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BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CRM
 Edition : 24.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 866 035
 Injection pump
 Pump designation : PES6P120A720/3LS122
 EP type number : 0 411 826 050
 Governor
 Governor design. : RSUV300...1050PGA325
 Governor no. : 0 421 829 066

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 443 022
 Opening
 pressure, bar : 207...210
 Test lines : 1 680 750 060
 Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.00x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32
 Prestroke mm : 2.00...2.10
 : (1.95...2.15)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 4- 2- 6- 3- 5
 Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

D17

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1000
 Rack travel in mm : 12.00...12.10
 Del. quantity cm³/ : 24.1...24.3
 100 s: (23.8...24.6)
 Spread cm³ : 0.7
 100 s: (0.9)
 2nd speed rpm : 300.0
 Rack travel in mm : 5.8...6.2
 Del. quantity cm³/ : 2.9...3.9
 100 s: (2.6...4.2)
 Spread cm³ : 0.4
 100 s: (-)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension
 Click setting x : 5.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1000
 Del. quantity : 241.0...243.0
 1000 : (238.0...246.0)
 Spread cm³ : 7.50
 1000 : (9.00)

RATED SPEED

1st version
 Control lever
 position degrees: 110...118

Testing:
 1st rack travel in: 11.00
 Speed rpm : 1045...1055
 2nd rack travel in: 4.00
 Speed rpm : 1070...1100
 3rd rack travel in: 4.00
 Speed rpm : 1080...1110
 4th rack travel in: 1250
 Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
 position degrees: 66...74

Setting point w/out bumper spring
Speed rpm : 200
Rack travel in mm : 6.0

Testing:

Speed rpm : 100
Minimum rack travel: 8.00
Speed rpm : 200
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 280...340

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 12.00...12.10
2nd speed rpm : 500
Rack travel in m: 12.00...12.20
5th speed rpm : 250
Rack travel in m: 13.20...13.80

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.00
Speed rpm : 1045...1055

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.80...6.20
Del.quantity cm³/ : 29.0...39.0
1000 s: (26.0...42.0)
Spread cm³ : 4.00

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN 6,1 q 1
 Edition : 24.07.92
 Replaces : 03.90
 Test oil : ISO-4113
 Combination no. : 0 401 876 340
 Injection pump
 Pump designation : PE6P110A32ORS499
 EP type number : 0 411 816 169
 Governor
 Governor design. : RSV325...1400POA374-9
 Governor no. : 0 421 833 335

Customer-spec. information
 Customer : PENTA

Engine : TAMD61

1st version kW : 221.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.40...2.50
 : (2.35...2.55)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.10...11.20

Del.quantity cm³/ : 11.9...12.1

100 s: (11.6...12.4)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 325.0

Rack travel in mm : 4.1...4.3

Del.quantity cm³/ : 1.1...1.5

100 s: (0.9...1.7)

Spread cm³ : 0.3

100 s: (0.6)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 900

Del.quantity : 119.0...121.0

1000 : (116.0...124.0)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version
 Control lever
 position degrees: 114...122

Testing:
 1st rack travel in: 10.10
 Speed rpm : 1450...1460

2nd rack travel in: 4.00
Speed rpm : 1525...1555
4th rack travel in: 1630
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 79...87
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 3.7

Testing:
Speed rpm : 100
Speed rpm : 325
Rack travel in mm : 4.10...4.30
Rack travel in mm : 2.00
Speed rpm : 450...510

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 11.00...11.20

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.60...8.80
2nd pressure hPa : 370
Rack travel in m: 8.80...8.90
3rd pressure hPa : 720
Rack travel in m: 10.60...10.80

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 1400
Del.quantity cm³/ : 121.0...125.0
1000 s: (118.0...128.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 55.0...57.0
1000 s: (52.0...60.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.10
Speed rpm : 1450...1460

D20

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...165.0
1000 s: (131.0...169.0)

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.10...4.30
Del.quantity cm³/ : 11.0...15.0
1000 s: (9.0...17.0)
Spread cm³ : 3.00
1000 s: (6.00)

Remarks:

APPLICATION

Navy

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 u
 Edition : 31.07.91
 Replaces : 26.02.91
 Test oil : ISO-4113

Combination no. : 0 402 036 741

Injection pump
 Pump designation : PES6P120A720/3LS3255
 EP type number : 0 412 026 739
 Governor
 Governor design. : RQV300...1000PA876-6
 Governor no. : 0 421 813 866

Customer-spec. information
 Customer : MAN

Engine : D2866LF03

1st version kW : 273.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)
 Rack travel in mm : 14.50...15.50
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.90...6.10
 & maximum rack tra: 14.5...15.5
 Difference ° CS : 2.00...4.00

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 15.00...15.10

Del.quantity cm³/ : 24.2...24.4

100 s: (23.9...24.7)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 4.7...5.1
 Del.quantity cm³/ : 1.7...2.3
 100 s: (1.4...2.6)

Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045
 travel mm : 9.90...10.10

2nd speed rpm : 300
 travel mm : 1.50...1.70

3rd speed rpm : 500
 travel mm : 3.30...3.90

4th speed rpm : 800
 travel mm : 6.80...7.20

5th speed rpm : 1300
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1060

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700
Aneroid pressure h: 1200
Del. quantity : 242.0...244.0
1000 : (239.0...247.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 298...306

Testing:

1st rack travel in: 13.60
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1125...1155
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 256...264

Testing:

Speed rpm : 200
Minimum rack travel: 6.40
Speed rpm : 300
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION

Speed rpm : 290...400

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 700
Rack travel in m: 15.00...15.10
2nd speed rpm : 1000
Rack travel in m: 14.60...14.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 15.00...15.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.70...11.90

2nd pressure hPa : 110
Rack travel in m: 12.00...12.10
3rd pressure hPa : 470
Rack travel in m: 14.00...14.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1000
Del. quantity cm³/ : 236.0...242.0
1000 s: (233.0...245.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.60
Speed rpm : 1040...1050

INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 210.0...230.0
1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.70...5.10
Del. quantity cm³/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 0-7051

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 6
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 930
 Injection pump
 Pump designation : PE6P120A320LS7834-10
 EP type number : 0 412 626 853
 Governor
 Governor design. : RQ300/1050PA972-7
 Governor no. : 0 421 801 583

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 15.20...15.40

Del. quantity cm³/ : 24.0...24.2

100 s: (23.7...24.5)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.9

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550

Aneroid pressure h: 1200

Del. quantity : 240.0...242.0

1000 : (237.0...245.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.90
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 13.00
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.6

Testing:

Speed rpm : 200
Minimum rack travel: 8.70
Speed rpm : 300
Rack travel in mm : 6.50...6.70
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.35
2nd speed rpm : 1050
Rack travel in m: 14.90...15.10
3rd speed rpm : 800
Rack travel in m: 15.20...15.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 15.20...15.40

Measurement

Speed 1/min : 500
1st pressure hPa : -
Rack travel in m: 10.10...10.40
2nd pressure hPa : 250
Rack travel in m: 10.60...10.70
3rd pressure hPa : 750
Rack travel in m: 13.80...14.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm3/ : 234.0...237.0
1000 s: (231.0...240.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.90
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 40.0...70.0
1000 s: (36.0...74.0)

Remarks:

Governor is equipped with a
temperature-sensitive starting device.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 930X
 Injection pump
 Pump designation : PE6P120A320LS7834-10
 EP type number : 0 412 626 853
 Governor
 Governor design. : RQ300/1050PA972-7
 Governor no. : 0 421 801 583

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 15.20...15.40

Del.quantity cm³/ : 24.0...24.2

100 s: (23.7...24.5)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.9

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550

Aneroid pressure h: 1200

Del.quantity : 240.0...242.0

1000 : (237.0...245.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:
1st rack travel in: 13.90
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 13.00
Speed rpm : 0.00...1.40

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.6

Testing:
Speed rpm : 200
Minimum rack travel: 8.70
Speed rpm : 300
Rack travel in mm : 6.50...6.70
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL
Dimension a mm : 0.35
2nd speed rpm : 1050
Rack travel in m: 14.90...15.10
3rd speed rpm : 800
Rack travel in m: 15.20...15.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 15.20...15.40

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.10...10.40
2nd pressure hPa : 250
Rack travel in m: 10.60...10.70
3rd pressure hPa : 750
Rack travel in m: 13.80...14.00

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm³/ : 234.0...237.0
1000 s: (231.0...240.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.90
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 40.0...70.0
1000 s: (36.0...74.0)

Remarks:

Governor is equipped with a
temperature-sensitive starting device.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 n
 Edition : 31.07.92
 Replaces : 02.92
 Test oil : ISO-4113
 Combination no. : 0 402 646 936
 Injection pump
 Pump designation : PE6P120A320RS7230
 EP type number : 0 412 626 843
 Governor
 Governor design. : RQV250...1000PA990K
 Governor no. : 0 421 815 274

Customer-spec. information
 Customer : DAF

Engine : WS 315 G

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder assembly : 1 688 901 105
 Opening pressure, bar : 207...210
 Orifice plate diameter mm : 0,8
 Test lines : 1 680 750 089
 Outside diameter x Wall thickness x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 13.80...14.80

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 980
 Rack travel in mm : 14.20...14.30
 Del.quantity cm3/ : 26.4...26.6
 100 s: (26.1...26.9)
 Spread cm3 : 0.5
 100 s: (0.9)

2nd speed rpm : 250.0
 Rack travel in mm : 5.8...6.0
 Del.quantity cm3/ : 1.4...2.0
 100 s: (1.1...2.3)
 Spread cm3 : 0.8
 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.30...1.70
 2nd speed rpm : 285
 travel mm : 2.10...2.50
 3rd speed rpm : 685
 travel mm : 6.20...6.60
 4th speed rpm : 1030
 travel mm : 9.60...10.00
 5th speed rpm : 1145
 travel mm : 11.20...11.40

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1130
 Rack travel in mm : 12.90...15.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 980
 Aneroid pressure h: 1500
 Del.quantity : 264.0...266.0
 1000 : (261.0...269.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 60...68

Testing:
1st rack travel in: 13.20
Speed rpm : 1030...1040
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1275
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 16...24

Testing:
Speed rpm : 100
Minimum rack travel: 6.70
Speed rpm : 250
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 310...350

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 500
Rack travel in m: 13.00...13.10
2nd speed rpm : 600
Rack travel in m: 13.00...13.20
3rd speed rpm : 750
Rack travel in m: 13.40...13.60
4th speed rpm : 825
Rack travel in m: 13.80...14.00
5th speed rpm : 980
Rack travel in m: 14.80...15.00

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 980
Pressure hPa : 1500
Rack travel mm : 14.20...14.30

Measurement

Speed 1/min : 980

1st pressure hPa : -
Rack travel in m: 8.80...9.00
2nd pressure hPa : 630
Rack travel in m: 11.80...11.90

3rd pressure hPa : 340
Rack travel in m: 9.60...9.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
Speed rpm : 500
Del. quantity cm³/ : 288.0...292.0
1000 s: (285.0...295.0)
Spread cm³ : 8.00
1000 s: (12.)
Aneroid pressure h: -
Speed rpm : 600
Del. quantity cm³/ : 162.0...164.0
1000 s: (159.0...167.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.20
Speed rpm : 1030...1040

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.10...5.30

Remarks:

:
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 9,6 r 1
 Edition : 26.06.92
 Replaces : 01.92
 Test oil : ISO-4113

Combination no. : 0 402 646 939

Injection pump
 Pump designation : PE6P120A320LS7836-10
 EP type number : 0 412 626 854
 Governor
 Governor design. : RQV300...950PA797-31
 Governor no. : 0 421 813 922

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 200.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

 Rack travel in mm : 12.40...12.60

 Del. quantity cm³/ : 18.2...18.4
 100 s : (17.9...18.7)

 Spread cm³ : 0.5
 100 s : (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.3...5.9
 Del. quantity cm³/ : 1.6...2.2
 100 s : (1.3...2.5)
 Spread cm³ : 0.6
 100 s : (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.00...1.50
 2nd speed rpm : 617
 travel mm : 5.00...5.50
 3rd speed rpm : 780
 travel mm : 6.10...6.60
 4th speed rpm : 1009
 travel mm : 8.30...8.80
 5th speed rpm : 1092
 travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1020
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 800
Del.quantity : 182.0...184.0
1000 : (179.0...187.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:
1st rack travel in: 12.10
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1075...1105
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 82...90

Testing:
Speed rpm : 200
Minimum rack trave: 7.40
Speed rpm : 300
Rack travel in mm : 5.50...5.70

CONSTANT REGULATION
Speed rpm : 300...450

TORQUE CONTROL
Dimension a mm : -
2nd speed rpm : 950
Rack travel in m: 13.10...13.30
3rd speed rpm : 800
Rack travel in m: 13.10...13.30

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 12.40...12.50

Measurement
Speed 1/min : 600

1st pressure hPa : 250
Rack travel in m: 10.90...11.10
2nd pressure hPa : 400
Rack travel in m: 11.80...12.00
3rd pressure hPa : 1000

E02

Rack travel in m: 12.60...12.80
4th pressure hPa : 1150
Rack travel in m: 12.90...13.10
5th pressure hPa : -
Rack travel in m: 10.30...10.60

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1400
Speed rpm : 950
Del.quantity cm³/ : 203.0...206.0
1000 s: (200.0...209.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm³/ : 202.0...206.0
1000 s: (199.0...209.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.10
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 9,6 q 1
 Edition : 26.06.92
 Replaces : 03.92
 Test oil : ISO-4113

Combination no. : 0 402 646 940

Injection pump
 Pump designation : PE6P120A320LS7836-10
 EP type number : 0 412 626 854
 Governor
 Governor design. : RQ300/950PA971-7
 Governor no. : 0 421 801 580

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 200.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.40...12.60

Del. quantity cm³/ : 18.2...18.4

100 s: (17.9...18.7)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.3...5.9

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 800

Del. quantity : 182.0...184.0

1000 : (179.0...187.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.10
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1200
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.6

Testing:

Speed rpm : 200
Minimum rack travel: 7.40
Speed rpm : 300
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 370...410

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 12.40...12.60

Measurement

Speed 1/min : 600

1st pressure hPa : 250
Rack travel in m: 10.90...11.10
2nd pressure hPa : 400
Rack travel in m: 11.80...12.00
3rd pressure hPa : 1000
Rack travel in m: 12.60...12.80
4th pressure hPa : 1150
Rack travel in m: 12.90...13.10
5th pressure hPa : -
Rack travel in m: 10.10...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 950
Del.quantity cm3/ : 203.0...206.0
1000 s: (200.0...209.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm3/ : 202.0...206.0
1000 s: (199.0...209.0)

Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.10
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 45.0...75.0
1000 s: (41.0...79.0)
Rack travel in mm : 10.30...10.60

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI 13,8 h1
 Edition : 21.05.92
 Replaces : 09.91
 Test oil : ISO-4113
 Combination no. : 0 402 646 946
 Injection pump
 Pump designation : PE6P130A720RS7225
 EP type number : 0 412 636 817
 Governor
 Governor design. : RGV300...975PA1002K
 Governor no. : 0 421 815 279

Customer-spec. information
 Customer : IVECO-UNIC

Engine : 8210.42.009

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test Lines : 1 680 750 015
 Outside diameter
 x wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 11.50...12.50

E05

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 975
 Rack travel in mm : 11.90...12.00
 Del.quantity cm³/ : 26.9...27.2
 100 s: (26.5...27.5)
 Spread cm³ : 0.6
 100 s: (1.0)

2nd speed rpm : 300.0
 Rack travel in mm : 3.8...4.2
 Del.quantity cm³/ : 1.9...2.5
 100 s: (1.5...2.9)
 Spread cm³ : 1.0
 100 s: (1.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1020
 travel mm : 9.90...10.10
 2nd speed rpm : 300
 travel mm : 1.60...2.00
 3rd speed rpm : 400
 travel mm : 3.40...4.00
 4th speed rpm : 600
 travel mm : 5.20...5.60
 5th speed rpm : 1250
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1045
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 975
 Aneroid pressure h: 900
 Del.quantity : 269.0...272.0
 1000 : (265.5...275.5)

Spread cm³ : 6.00
1000 : (10.00)

RATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:

1st rack travel in: 10.90
Speed rpm : 1015...1025
2nd rack travel in: 4.00
Speed rpm : 1075...1105
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 66...74

Testing:

Speed rpm : 100
Minimum rack travel: 5.40
Speed rpm : 300
Rack travel in mm : 3.90...4.10

CONSTANT REGULATION

Speed rpm : 280...400

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 975
Rack travel in m: 11.90...12.00
2nd speed rpm : 800
Rack travel in m: 11.60...11.80
3rd speed rpm : 500
Rack travel in m: 10.50...10.90

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 975
Pressure hPa : 900
Rack travel mm : 11.90...12.00

Measurement

Speed 1/min : 975

1st pressure hPa : -
Rack travel in m: 9.40...9.60
2nd pressure hPa : 490
Rack travel in m: 11.20...11.30
3rd pressure hPa : 290
Rack travel in m: 9.80...10.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 500
Del. quantity cm³/ : 239.0...247.0
1000 s: (235.5...250.5)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 196.0...199.0
1000 s: (192.5...202.5)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 10.90
Speed rpm : 1015...1025

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 125.0...155.0
1000 s: (121.0...159.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 3.80...4.20
Del. quantity cm³/ : 19.0...25.0
1000 s: (15.0...29.0)
Spread cm³ : 10.00
1000 s: (14.00)

Remarks:

:
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI 13,8 h2
 Edition : 03.07.92
 Replaces : 11.91
 Test oil : ISO-4113

Combination no. : 0 402 646 947

Injection pump
 Pump designation : PE6P130A720RS7225
 EP type number : 0 412 636 817
 Governor
 Governor design. : RQV300...950PA1002
 -1K
 Governor no. : 0 421 815 280

Customer-spec. information
 Customer : IVECO-UNIC

Engine : 8210.42.400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)

E07

Rack travel in mm : 13.50...14.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.00...13.10

Del.quantity cm³/ : 31.3...31.5
 100 s: (31.0...31.8)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 4.0...4.4
 Del.quantity cm³/ : 1.9...2.5
 100 s: (1.6...2.8)

Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 995
 travel mm : 8.50...8.70
 2nd speed rpm : 300
 travel mm : 1.00...1.40
 3rd speed rpm : 500
 travel mm : 3.30...3.90
 4th speed rpm : 750
 travel mm : 5.80...6.20
 5th speed rpm : 1300
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1125
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 900
 Aneroid pressure h: 900
 Del.quantity : 313.0...315.0
 1000 : (310.0...318.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 112...120

Testing:

1st rack travel in: 12.00
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1100...1130
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 66...74

Testing:

Speed rpm : 100
Minimum rack travel: 5.70
Speed rpm : 300
Rack travel in mm : 4.00...4.40

CONSTANT REGULATION

Speed rpm : 340...460

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 13.00...13.10
2nd speed rpm : 700
Rack travel in m: 12.70...12.90
3rd speed rpm : 550
Rack travel in m: 12.00...12.20
4th speed rpm : 300
Rack travel in m: 11.20...11.70

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 900
Pressure hPa : 900
Rack travel mm : 13.00...13.10

Measurement

Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 9.30...9.50
2nd pressure hPa : 560
Rack travel in m: 11.50...11.60
3rd pressure hPa : 350

E08

Rack travel in m: 9.70...10.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm³/ : 317.0...321.0
1000 s: (314.0...324.0)
Aneroid pressure h: 900
Speed rpm : 550
Del.quantity cm³/ : 286.0...292.0
1000 s: (283.0...295.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 182.0...184.0
1000 s: (179.0...187.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.00
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 125.0...155.0
1000 s: (121.0...159.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.00...4.40
Del.quantity cm³/ : 19.0...25.0
1000 s: (16.0...28.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA
 Edition : 24.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 951
 Injection pump
 Pump designation : PE6P120A720RS7188
 EP type number : 0 412 626 832
 Governor
 Governor design. : RQ200/950PA745-3
 Governor no. : 0 421 801 579

Customer-spec. information
 Customer : SCANIA

Engine : DSC 11 77

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 104
 Opening
 pressure, bar : 250...253
 Orifice plate
 diameter mm : 0,7
 Test lines : 1 680 750 008
 Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
 : (4.35...4.55)
 Rack travel in mm : 9.00...12.00

E09

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 11.10...11.20
 Del.quantity cm³/ : 17.0...17.2
 100 s : (16.8...17.4)
 Spread cm³ : 0.6
 100 s : (0.9)

2nd speed rpm : 225.0
 Rack travel in mm : 4.5...5.3
 Del.quantity cm³/ : 1.2...1.6
 100 s : (-)
 Spread cm³ : 0.5
 100 s : (0.8)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 900
 Del.quantity : 170.0...172.0
 1000 : (168.0...174.0)
 Spread cm³ : 6.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600
 Rack travel in mm : 16.5

Testing:
 1st rack travel in: 11.70
 Speed rpm : 995...1010
 2nd rack travel in: 4.00
 Speed rpm : 1110...1140

4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 225
Rack travel in mm : 4.7

Testing:
Speed rpm : 100
Minimum rack travel: 6.20
Speed rpm : 225
Rack travel in mm : 4.60...4.80
Rack travel in mm : 2.00
Speed rpm : 300...360

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 11.10...11.30

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.30...9.70
2nd pressure hPa : 420
Rack travel in m: 10.70...10.80
3rd pressure hPa : 280
Rack travel in m: 9.80...10.00

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 950
Del.quantity cm³/ : 170.0...172.0
1000 s: (168.0...174.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 120.0...124.0
1000 s: (118.0...126.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.70
Speed rpm : 995...1010

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 9.30...9.70

LOW IDLE

Speed rpm : 225
Rack travel in mm : 4.50...5.10

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

Start-of-delivery setting with ROBO
diaphragm.

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 9,6 q 6
 Edition : 31.07.92
 Replaces : 01.92
 Test oil : ISO-4113

Combination no. : 0 402 646 952

Injection pump
 Pump designation : PE6P120A320LS7836-10
 EP type number : 0 412 626 854
 Governor
 Governor design. : RQ300/1050PA972-8
 Governor no. : 0 421 801 626

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 180.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 11.70...11.90

Del. quantity cm³/ : 16.4...16.6
 100 s: (16.1...16.9)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.3...5.9
 Del. quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)

Spread cm³ : 0.6
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 600
 Aneroid pressure h: 700
 Del. quantity : 164.0...166.0
 1000 : (161.0...169.0)

Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600
 Rack travel in mm : 20.0

Testing:
1st rack travel in: 11.60
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.6

Testing:
Speed rpm : 200
Minimum rack travel: 7.40
Speed rpm : 300
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 370...410

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 11.70...11.90

Measurement
Speed 1/min : 600

1st pressure hPa : 180
Rack travel in m: 10.40...10.60
2nd pressure hPa : 280
Rack travel in m: 11.30...11.50
3rd pressure hPa : 900
Rack travel in m: 11.80...12.00 *

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1400
Speed rpm : 1050
Del.quantity cm³/ : 182.0...185.0
1000 s: (179.0...188.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm³/ : 186.0...190.0
1000 s: (183.0...193.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.60
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 50.0...80.0
1000 s: (46.0...84.0)
Rack travel in mm : 10.60...10.90

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : 01.92
 Test oil : ISO-4113

Combination no. : 0 402 646 953

Injection pump
 Pump designation : PE6P120A320LS7836-10
 EP type number : 0 412 626 854
 Governor
 Governor design. : RQ300/950PA971-8
 Governor no. : 0 421 801 625

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 180.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 11.70...11.90

Del. quantity cm³/ : 16.4...16.6

100 s: (16.1...16.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.3...5.9

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -?

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 700

Del. quantity : 164.0...166.0

1000 : (161.0...169.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:
1st rack travel in: 11.50
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1100
Speed rpm : 0.00...1.50

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.6

Testing:
Speed rpm : 200
Minimum rack travel: 7.40
Speed rpm : 300
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 370...410

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 11.70...11.90

Measurement
Speed 1/min : 600

1st pressure hPa : 180
Rack travel in m: 10.40...10.60
2nd pressure hPa : 280
Rack travel in m: 11.30...11.50
3rd pressure hPa : 900
Rack travel in m: 11.80...12.00 *
4th pressure hPa : 1100
Rack travel in m: 12.20...12.40
5th pressure hPa : -
Rack travel in m: 10.30...10.60

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1400
Speed rpm : 950
Del.quantity cm³/ : 187.0...190.0
1000 s: (184.0...193.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm³/ : 190.0...194.0
1000 s: (187.0...197.0)

Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.50
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 10.30...10.60

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 954
 Injection pump
 Pump designation : PE6P120A320LS7834-10
 EP type number : 0 412 626 853
 Governor
 Governor design. : RQ300/1050PA993-5
 Governor no. : 0 421 801 610

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 213.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.70...13.90

Del. quantity cm³/ : 20.9...21.1
 100 s: (20.6...21.4)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.9...6.5
 Del. quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.6
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 600
 Aneroid pressure h: 800
 Del. quantity : 209.0...211.0
 1000 : (206.0...214.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600
 Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 6.10...6.30
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : -
2nd speed rpm : 1050
Rack travel in m: 14.00...14.20
3rd speed rpm : 800
Rack travel in m: 14.10...14.30

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 13.70...13.90

Measurement

Speed 1/min : 600

1st pressure hPa : 250
Rack travel in m: 10.30...10.50
2nd pressure hPa : 550
Rack travel in m: 12.90...13.10
3rd pressure hPa : 1100
Rack travel in m: 13.80...14.00
4th pressure hPa : -
Rack travel in m: 9.50...9.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500

Speed rpm : 1050
Del.quantity cm3/ : 216.0...219.0
1000 s: (213.0...222.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1500
Speed rpm : 800
Del.quantity cm3/ : 219.0...223.0
1000 s: (216.0...226.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...230.0
1000 s: (206.0...234.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 646 957

Injection pump
 Pump designation : PE6P120A320LS7836-1C
 EP type number : 0 412 626 854
 Governor
 Governor design. : RQV300...1050PA797
 -32
 Governor no. : 0 421 813 957

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kw : 180.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)

Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 11.70...11.90

Del.quantity cm³/ : 16.4...16.6
 100 s: (16.1...16.9)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.3...5.9
 Del.quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)

Spread cm³ : 0.6
 100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.50...1.00

2nd speed rpm : 830
 travel mm : 5.90...6.40

3rd speed rpm : 1107
 travel mm : 8.10...8.60

4th speed rpm : 1190
 travel mm : 9.80...10.30

5th speed rpm : 1290
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1100
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
Aneroid pressure h: 700
Del.quantity : 164.0...166.0
1000 : (161.0...169.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 116...124

Testing:

1st rack travel in: 11.30
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 78...86

Testing:

Speed rpm : 200
Minimum rack travel: 7.40
Speed rpm : 300
Rack travel in mm : 5.50...5.70

CONSTANT REGULATION

Speed rpm : 300...400

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 11.70...11.90

Measurement

Speed 1/min : 600
1st pressure hPa : 180
Rack travel in m: 10.40...10.60
2nd pressure hPa : 280
Rack travel in m: 11.30...11.50
3rd pressure hPa : 900
Rack travel in m: 11.80...12.00 *
4th pressure hPa : 1100
Rack travel in m: 12.10...12.30
5th pressure hPa : -
Rack travel in m: 10.30...10.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 1050
Del.quantity cm3/ : 182.0...185.0
1000 s: (179.0...188.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm3/ : 186.0...190.0
1000 s: (183.0...193.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.30
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 646 958

Injection pump
 Pump designation : PE6P120A320LS7&36-10
 EP type number : 0 412 626 854
 Governor
 Governor design. : RQV300...950PA797-33
 Governor no. : 0 421 813 958

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 180.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 11.70...11.90

Del. quantity cm³/ : 16.4...16.6

100 s: (16.1...16.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.3...5.9

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.00...1.50

2nd speed rpm : 780
 travel mm : 6.10...6.60

3rd speed rpm : 1008
 travel mm : 8.30...8.80

4th speed rpm : 1092
 travel mm : 11.00...10.30

5th speed rpm : 1190
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1020

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
Aneroid pressure h: 700
Del.quantity : 164.0...166.0
1000 : (161.0...169.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 114...122

Testing:

1st rack travel in: 11.50
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 78...86

Testing:

Speed rpm : 200
Minimum rack trave: 7.40
Speed rpm : 300
Rack travel in mm : 5.50...5.70

CONSTANT REGULATION

Speed rpm : 300...450

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 11.70...11.90

Measurement

Speed 1/min : 600
1st pressure hPa : 180
Rack travel in m: 10.40...10.60
2nd pressure hPa : 280
Rack travel in m: 11.30...11.50
3rd pressure hPa : 900
Rack travel in m: 11.80...12.00 *
4th pressure hPa : 1100
Rack travel in m: 12.20...12.40
5th pressure hPa : -
Rack travel in m: 10.30...10.60

START CUT-OUT

E20

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 950
Del.quantity cm3/ : 187.0...190.0
1000 s: (184.0...193.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm3/ : 189.0...193.0
1000 s: (186.0...196.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.50
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:

:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : --
 Test oil : ISO-4113
 Combination no. : 0 402 646 959
 Injection pump
 Pump designation : PE6P120A32OLS7836-10
 EP type number : 0 412 626 854
 Governor
 Governor design. : RQ300/1050PA993-6
 Governor no. : 0 421 801 616

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kw : 200.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600
 Rack travel in mm : 12.40...12.60
 Del. quantity cm³/ : 18.2...18.4
 100 s : (17.9...18.7)
 Spread cm³ : 0.5
 100 s : (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.3...5.9
 Del. quantity cm³/ : 1.6...2.2
 100 s : (1.3...2.5)
 Spread cm³ : 0.6
 100 s : (1.0)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 600
 Aneroid pressure h: 800
 Del. quantity : 182.0...184.0
 1000 : (179.0...187.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600
 Rack travel in mm : 20.0

Testing:
1st rack travel in: 12.10
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 13.00
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.6

Testing:

Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 12.40...12.60

Measurement

Speed 1/min : 600

1st pressure hPa : 250
Rack travel in m: 10.90...11.10
2nd pressure hPa : 400
Rack travel in m: 11.80...12.00
3rd pressure hPa : 1000
Rack travel in m: 12.60...12.80
4th pressure hPa : 1150
Rack travel in m: 12.90...13.10
5th pressure hPa : -
Rack travel in m: 10.30...10.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 1050
Del.quantity cm³/ : 201.0...204.0
1000 s: (198.0...207.0)
Spread cm³ : 8.00
1000 s: (12.0)

Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm³/ : 202.0...206.0
1000 s: (199.0...209.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.10
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 9,6 q 8
 Edition : 26.06.92
 Replaces : 01.92
 Test oil : ISO-4113

 Combination no. : 0 402 646 960

 Injection pump
 Pump designation : PE6P12DA320LS7836-10
 EP type number : 0 412 626 854
 Governor
 Governor design. : RQ300/950PA993-7
 Governor no. : 0 421 801 617

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 200.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.40...12.60

Del. quantity cm³/ : 18.2...18.4

100 s: (17.9...18.7)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.3...5.9

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 800

Del. quantity : 182.0...184.0

1000 : (179.0...187.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:
1st rack travel in: 12.10
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 12.00
Speed rpm : 0.00...1.50

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.6

Testing:
Speed rpm : 200
Minimum rack travel: 7.40
Speed rpm : 300
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 370...410

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 12.40...12.60

Measurement
Speed 1/min : 600

1st pressure hPa : 250
Rack travel in m: 10.90...11.10
2nd pressure hPa : 400
Rack travel in m: 11.80...12.00
3rd pressure hPa : 1000
Rack travel in m: 12.60...12.80
4th pressure hPa : 1150
Rack travel in m: 12.90...13.10
5th pressure hPa : -
Rack travel in m: 10.30...10.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1400
Speed rpm : 950
Del.quantity cm³/ : 203.0...206.0
1000 s: (200.0...209.0)
Spread cm³ : 8.00
1000 s: (12.0)

Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm³/ : 202.0...206.0
1000 s: (199.0...209.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.10
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN 16,2 b3
 Edition : 31.07.92
 Replaces : 01.92
 Test oil : ISO-4113
 Combination no. : 0 402 646 967
 Injection pump
 Pump designation : PE6P130A720RS7150
 EP type number : 0 412 636 808
 Governor
 Governor design. : RQV250...900PA881-1
 Governor no. : 0 421 813 982

Customer-spec. information
 Customer : PENTA

Engine : TAMD 162 A

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 922 198
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 3.60...3.70
 : (3.55...3.75)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 11.50...11.60
 Del.quantity cm3/ : 33.4...33.7
 100 s: (33.1...34.1)
 Spread cm3 : 0.6
 100 s: (1.0)
 2nd speed rpm : 250.0
 Rack travel in mm : 4.1...4.3
 Del.quantity cm3/ : 1.7...2.2
 100 s: (1.4...2.4)
 Spread cm3 : 0.5
 100 s: (0.8)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 0.90...1.30
 2nd speed rpm : 350
 travel mm : 2.00...2.60
 3rd speed rpm : 700
 travel mm : 4.50...5.10
 4th speed rpm : 925
 travel mm : 7.60...7.80
 5th speed rpm : 985
 travel mm : 8.40...8.80

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 980
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 1000
 Del.quantity : 334.5...337.5
 1000 : (331.0...341.0)

Spread cm³ : 6.00
1000 : (10.00)

RATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:

1st rack travel in: 10.50
Speed rpm : 925...935
2nd rack travel in: 4.00
Speed rpm : 985...1015
4th rack travel in: 1100
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 63...71

Testing:

Speed rpm : 100
Minimum rack travel: 5.70
Speed rpm : 250
Rack travel in mm : 4.10...4.30

CONSTANT REGULATION

Speed rpm : 250...350

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 11.50...11.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.10...9.30
2nd pressure hPa : 665
Rack travel in m: 11.20...11.30
3rd pressure hPa : 350
Rack travel in m: 9.40...9.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700
Del. quantity cm³/ : 226.5...229.5
1000 s: (223.0...233.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.50
Speed rpm : 925...935

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.10...4.30
Del. quantity cm³/ : 17.0...22.0
1000 s: (14.5...24.5)
Spread cm³ : 5.00
1000 s: (8.00)

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 3.0...3.1 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
 Edition : 26.06.92
 Replaces : 03.92
 Test oil : ISO-4113
 Combination no. : 0 402 646 970
 Injection pump
 Pump designation : PE6P120A320RS7248Y
 EP type number : 0 412 626 863
 Governor
 Governor design. : RQV275...1150PA986
 Governor no. : 0 421 813 920

Customer-spec. information
 Customer : DAF

Engine : RS 180 L

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 120...140

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 14.00...15.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10
 & maximum rack tra: 10.2...11.2
 Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 10.70...10.80

Del.quantity cm³/ : 14.5...14.7

100 s: (14.2...15.0)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.3...5.5

Del.quantity cm³/ : 1.3...1.9

100 s: (1.0...2.2)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275

travel mm : 1.20...1.60

2nd speed rpm : 315

travel mm : 1.80...2.20

3rd speed rpm : 1205

travel mm : 8.10...8.50

4th speed rpm : 1340

travel mm : 9.70...9.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1330

Rack travel in mm : 9.40...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000
Aneroid pressure h: 1000
Del. quantity : 145.5...147.5
1000 : (142.5...150.5)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 9.70
Speed rpm : 1180...1190
2nd rack travel in: 4.00
Speed rpm : 1265...1295
4th rack travel in: 1450
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 79...87

Testing:
Speed rpm : 175
Minimum rack travel: 6.20
Speed rpm : 275
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION

Speed rpm : 315...365

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 10.70...10.80

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 9.40...9.60
2nd pressure hPa : 260
Rack travel in m: 10.30...10.40
3rd pressure hPa : 190
Rack travel in m: 9.80...10.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 600

Del. quantity cm³/ : 119.0...121.0
1000 s: (116.0...124.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.70
Speed rpm : 1180...1190

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.60...4.80

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : 1B
 Edition : 31.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 977
 Injection pump
 Pump designation : PE6P120A320LS7846
 EP type number : 0 412 626 865
 Governor
 Governor design. : RQ300/1050PA1030-1
 Governor no. : 0 421 801 641

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.90...13.10

Del.quantity cm³/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.5

Del.quantity cm³/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 229.0...231.0

1000 : (226.0...234.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.60
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:

Speed rpm : 200
Minimum rack trave: 7.50
Speed rpm : 300
Rack travel in mm : 4.90...5.50
Rack travel in mm : 2.00
Speed rpm : 360...400

TORQUE CONTROL

Dimension a mm : 0.35
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.60...12.80
2nd speed rpm : 700
Rack travel in m: 13.30...13.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.60...9.90

Measurement

Speed 1/min : 500
1st pressure hPa : 300
Rack travel in m: 10.10...10.30
2nd pressure hPa : 700
Rack travel in m: 12.00...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1050
Del.quantity cm3/ : 216.0...220.0
1000 s: (213.0...223.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500

F02

Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.60
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 10.80...11.00

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : C 402 646 979
 Injection pump
 Pump designation : PE6P120A320LS7846
 EP type number : 0 412 626 865
 Governor
 Governor design. : RQ300/950PA1032
 Governor no. : 0 421 801 644

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kw : 230.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Over-flow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.90...13.10

Del.quantity cm³/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.5

Del.quantity cm³/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 229.0...231.0

1000 : (226.0...234.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.90
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:

Speed rpm : 200
Minimum rack trave: 7.50
Speed rpm : 300
Rack travel in mm : 4.90...5.50
Rack travel in mm : 2.00
Speed rpm : 360...400

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.60...9.90

Measurement

Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 10.10...10.30
2nd pressure hPa : 700
Rack travel in m: 12.00...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 950
Del.quantity cm3/ : 226.0...230.0
1000 s: (223.0...233.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.90
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 9.60...10.10

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 980
 Injection pump
 Pump designation : PE6P120A320LS7846
 EP type number : 0 412 626 865
 Governor
 Governor design. : RQV300...950PA1033
 Governor no. : 0 421 813 990

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.90...13.10

Del. quantity cm³/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.5

Del. quantity cm³/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.10...1.50

2nd speed rpm : 567
 travel mm : 4.40...5.00

3rd speed rpm : 780
 travel mm : 6.00...6.60

4th speed rpm : 1010
 travel mm : 8.50...8.70

5th speed rpm : 1190
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1066
 Rack travel in mm : 10.60...13.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 1000
Del. quantity : 229.0...231.0
1000 : (226.0...234.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 11.90
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 76...84

Testing:
Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 4.90...5.50

CONSTANT REGULATION
Speed rpm : 300...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.60...9.90

Measurement
Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 10.10...10.30
2nd pressure hPa : 700
Rack travel in m: 12.00...12.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 950
Del. quantity cm³/ : 225.0...230.0
1000 s: (223.0...233.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.90
Speed rpm : 990...1000

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI
Edition : 21.05.92
Replaces : 03.92
Test oil : ISO-4113

Combination no. : 0 402 646 981

Injection pump
Pump designation : PE6P130A720RS7225
EP type number : 0 412 636 817
Governor
Governor design. : RQV300...900PA946-1
Governor no. : 0 421 813 992

Customer-spec. information
Customer : IVECO-UNIC

Engine : 8210.42.061

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)

Rack travel in mm : 11.50...12.50

F07

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.60...12.70

Del. quantity cm³/ : 27.0...27.3

100 s: (26.6...27.6)

Spread cm³ : 0.6

100 s: (1.0)

2nd speed rpm : 300.0

Rack travel in mm : 4.4...4.8

Del. quantity cm³/ : 1.9...2.5

100 s: (1.5...2.9)

Spread cm³ : 1.0

100 s: (1.4)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 945

travel mm : 7.70...7.90

2nd speed rpm : 300

travel mm : 1.00...1.40

3rd speed rpm : 550

travel mm : 3.40...4.00

4th speed rpm : 750

travel mm : 5.60...6.00

5th speed rpm : 1250

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1090

Rack travel in mm : 10.30...12.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 900

Del. quantity : 270.0...273.0

1000 : (266.5...276.5)

Spread cm³ : 6.00
1000 : (10.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 11.60
Speed rpm : 940...950
2nd rack travel in: 4.00
Speed rpm : 1025...1055
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 75...83

Testing:
Speed rpm : 100
Minimum rack travel: 6.10
Speed rpm : 300
Rack travel in mm : 4.50...4.70

CONSTANT REGULATION
Speed rpm : 350...480

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.60...12.70

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.20...10.40
2nd pressure hPa : 350
Rack travel in m: 12.00...12.10
3rd pressure hPa : 300
Rack travel in m: 11.00...11.30

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 500
Del.quantity cm³/ : 285.0...292.0
1000 s: (281.5...295.5)
Aneroid pressure h: -
Speed rpm : 500

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Del.quantity cm³/ : 202.0...205.0
1000 s: (198.5...208.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.60
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...165.0
1000 s: (131.0...169.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.40...4.80
Del.quantity cm³/ : 19.0...25.0
1000 s: (15.0...29.0)
Spread cm³ : 10.00
1000 s: (14.00)

Remarks:

:
Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE
 Edition : 31.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 982
 Injection pump
 Pump designation : PE6P120A320LS7848
 EP type number : 0 412 626 866
 Governor
 Governor design. : RQV300...1050PA1034
 Governor no. : 0 421 813 993

Customer-spec. information
 Customer : LIEBHERR

Engine : D 9306 TI

1st version kW : 270.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
 : (4.45...4.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 6- 3- 5- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 14.90...15.00

Del. quantity cm³/ : 25.9...26.1

100 s: (25.6...26.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.5...5.9

Del. quantity cm³/ : 3.0...3.6

100 s: (2.7...3.9)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.70...2.10

2nd speed rpm : 405
 travel mm : 2.40...2.90

3rd speed rpm : 550
 travel mm : 4.20...4.60

4th speed rpm : 780
 travel mm : 6.30...6.90

5th speed rpm : 1118
 travel mm : 10.40...10.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1185

Rack travel in mm : 12.60...15.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1500

Del. quantity : 259.0...261.0

1000 : (256.0...264.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control Lever
position degrees: 103...111

Testing:

1st rack travel in: 13.90
Speed rpm : 1100...1110
2nd rack travel in: 4.00
Speed rpm : 1200...1230
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever
position degrees: 68...76

Testing:

Speed rpm : 250
Minimum rack travel: 8.90
Speed rpm : 350
Rack travel in mm : 5.60...5.80
Rack travel in mm : 2.00
Speed rpm : 430...490

CONSTANT REGULATION

Speed rpm : 350...420

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 700
Pressure hPa : 1500
Rack travel mm : 14.90...15.00

Measurement

Speed 1/min : 700
2nd pressure hPa : 950
Rack travel in m: 14.60...14.70
3rd pressure hPa : 750
Rack travel in m: 13.00...13.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700

Del. quantity cm³/ : 194.0...196.0
1000 s: (191.0...199.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.90
Speed rpm : 1100...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 150.0...170.0
1000 s: (146.0...174.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.07.92
 Replaces : -
 Test oil : ISO-4113

 Combination no. : 0 402 646 983

 Injection pump
 Pump designation : PE6P120A320LS7846
 EP type number : 0 412 626 865
 Governor
 Governor design. : RGV300...1050PA1033-
 2
 Governor no. : 0 421 813 994

 Customer-spec. information
 Customer : MERCEDES-BENZ

 Engine : OM401 LA

 1st version kW : 230.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

 Overflow valve : 1 417 413 025

 Inlet press., bar : 1.50

 Overflow
 quantity min. 1/h: 100...120

 Test nozzle holder
 assembly : 1 688 901 105

 Opening
 pressure, bar : 207...210

 Orifice plate
 diameter mm : 0,8

 Test lines : 1 680 750 075

 Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

 Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

 Phasing : 0-60-120-180-240-300

 Tolerance + - ° : 0.50 (0.75)

 Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

 Rack travel in mm : 12.90...13.10

 Del.quantity cm³/ : 22.9...23.1
 100 s: (22.6...23.4)

 Spread cm³ : 0.5

 100 s: (0.9)

 2nd speed rpm : 300.0
 Rack travel in mm : 4.9...5.5
 Del.quantity cm³/ : 1.0...1.6
 100 s: (0.7...1.9)
 Spread cm³ : 0.6
 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.60...1.00
 2nd speed rpm : 575
 travel mm : 4.20...4.80
 3rd speed rpm : 830
 travel mm : 5.80...6.40
 4th speed rpm : 1107
 travel mm : 8.30...8.50
 5th speed rpm : 1290
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: 108
 Speed rpm : 1160
 Rack travel in mm : 10.40...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700
Aneroid pressure h: 1000
Del. quantity : 229.0...231.0
1000 : (226.0...234.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:

1st rack travel in: 11.60
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1155...1185
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 76...84

Testing:

Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 4.90...5.50

CONSTANT REGULATION

Speed rpm : 300...400

TORQUE CONTROL

Dimension a mm : 0.30
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.60...12.80
2nd speed rpm : 850
Rack travel in m: 12.90...13.10

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.60...9.90

Measurement

Speed 1/min : 500
1st pressure hPa : 300
Rack travel in m: 10.10...10.30
2nd pressure hPa : 700

Rack travel in m: 12.00...12.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1050
Del. quantity cm³/ : 216.0...220.0
1000 s: (213.0...223.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.60
Speed rpm : 1090...1100

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
Edition : 26.06.92
Replaces : 03.92
Test oil : ISO-4113

Combination no. : 0 402 646 984

Injection pump
Pump designation : PE6P120A32ORS7248
EP type number : 0 412 626 861
Governor
Governor design. : RQ275/1150PA987
Governor no. : 0 421 801 578

Customer-spec. information
Customer : DAF

Engine : RS 222 L

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
Rack travel in mm : 14.00...15.00

F13

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10
& maximum rack tra: 11.7...12.7
Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.20...12.30

Del. quantity cm³/ : 18.4...18.6
100 s: (18.1...18.9)

Spread cm³ : 0.5
100 s: (0.9)

2nd speed rpm : 275.0
Rack travel in mm : 5.3...5.5
Del. quantity cm³/ : 1.3...1.9
100 s: (1.0...2.2)
Spread cm³ : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 550
Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Aneroid pressure h: 1000
Del. quantity : 184.0...186.0
1000 : (181.0...189.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Setting point:
Speed rpm : 550
Rack travel in mm : 15.8

Testing:
1st rack travel in: 11.20
Speed rpm : 1175...1190
2nd rack travel in: 4.00
Speed rpm : 1255...1285
4th rack travel in: 14.50
Speed rpm : 0.00...1.40

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 275
Rack travel in mm : 4.7

Testing:
Speed rpm : 100
Minimum rack travel: 6.20
Speed rpm : 275
Rack travel in mm : 4.60...4.80
Rack travel in mm : 2.00
Speed rpm : 320...360

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 12.20...12.30

Measurement
Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 9.30...9.50
2nd pressure hPa : 420
Rack travel in m: 11.60...11.70
3rd pressure hPa : 240
Rack travel in m: 10.30...10.50

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 600
Del. quantity cm³/ : 120.0...122.0
1000 s: (117.0...125.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.20
Speed rpm : 1175...1190

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.60...4.80

Remarks:

:
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
 Edition : 26.06.92
 Replaces : 03.92
 Test oil : ISO-4113
 Combination no. : 0 402 646 985
 Injection pump
 Pump designation : PE6P120A32ORS7248Z
 EP type number : 0 412 626 862
 Governor
 Governor design. : RQ275/1150PA987
 Governor no. : 0 421 801 578

Customer-spec. information
 Customer : DAF

Engine : RS 200 L

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder assembly : 1 688 901 105
 Opening pressure, bar : 207...210
 Orifice plate diameter mm : 0,8
 Test lines : 1 680 750 089
 Outside diameter x Wall thickness x Length mm : 8.00x2.50x600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 14.00...15.00

F15

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10
 & maximum rack tra: 10.8...11.8
 Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 1000
 Rack travel in mm : 11.30...11.40
 Del. quantity cm³/ : 16.4...16.6
 100 s: (16.1...16.9)
 Spread cm³ : 0.5
 100 s: (0.9)
 2nd speed rpm : 275.0
 Rack travel in mm : 5.3...5.5
 Del. quantity cm³/ : 1.3...1.9
 100 s: (1.0...2.2)
 Spread cm³ : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 550
 Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1000
 Aneroid pressure h: 1000
 Del. quantity : 164.0...166.0
 1000 : (161.0...169.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 550
 Rack travel in mm : 15.8

Testing:
1st rack travel in: 10.30
Speed rpm : 1175...1190
2nd rack travel in: 4.00
Speed rpm : 1245...1275
4th rack travel in: 1450
Speed rpm : 0.00...1.40

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 275
Rack travel in mm : 4.7

Testing:
Speed rpm : 100
Minimum rack travel: 6.20
Speed rpm : 275
Rack travel in mm : 4.60...4.80
Rack travel in mm : 2.00
Speed rpm : 320...360

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 11.30...11.40

Measurement
Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 9.00...9.20
2nd pressure hPa : 340
Rack travel in m: 10.70...10.80
3rd pressure hPa : 200
Rack travel in m: 9.60...9.80

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 600
Del. quantity cm³/ : 115.0...117.0
1000 s: (112.0...120.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.30
Speed rpm : 1175...1190

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.60...4.80

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
Edition : 26.06.92
Replaces : 03.92
Test oil : ISO-4113
Combination no. : 0 402 646 986
Injection pump
Pump designation : PE6P120A320RS7248Y
EP type number : 0 412 626 863
Governor
Governor design. : RQ275/1150PA987
Governor no. : 0 421 801 578

Customer-spec. information
Customer : DAF

Engine : RS 180 L

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42
Overflow valve : 1 419 992 198
Inlet press., bar : 1.50
Test nozzle holder assembly : 1 688 901 105
Opening pressure, bar : 207...210
Orifice plate diameter mm : 0,8
Test lines : 1 680 750 089
Outside diameter x Wall thickness x Length mm : 8.00X2.50X600
(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 14.00...15.00

F17

Firing order : 1- 5- 3- 6- 2- 4
Phasing : 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0.75)
Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...0501
& maximum rack tra: 10.2...11.2
Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 1000
Rack travel in mm : 10.70...10.80
Del.quantity cm3/ : 14.5...14.7
100 s: (14.2...15.0)
Spread cm3 : 0.5
100 s: (0.9)
2nd speed rpm : 275.0
Rack travel in mm : 5.3...5.5
Del.quantity cm3/ : 1.3...1.9
100 s: (1.0...2.2)
Spread cm3 : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 550
Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Aneroid pressure h: 1000
Del.quantity : 145.5...147.5
1000 : (142.5...150.5)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Setting point:
Speed rpm : 550
Rack travel in mm : 15.8

Testing:

1st rack travel in: 9.70
Speed rpm : 1175...1190
2nd rack travel in: 4.00
Speed rpm : 1245...1275
4th rack travel in: 1450
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 275
Rack travel in mm : 4.7

Testing:

Speed rpm : 175
Minimum rack trave: 7.00
Speed rpm : 275
Rack travel in mm : 4.60...4.80
Rack travel in mm : 2.00
Speed rpm : 320...360

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 10.70...10.80

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 9.40...9.60
2nd pressure hPa : 260
Rack travel in m: 10.30...10.40
3rd pressure hPa : 190
Rack travel in m: 9.80...10.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 600
Del. quantity cm3/ : 119.0...121.0
1000 s: (116.0...124.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 9.70
Speed rpm : 1175...1190

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.60...4.80

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
 Edition : 31.07.92
 Replaces : 02.92
 Test oil : ISO-4113
 Combination no. : 0 402 646 988
 Injection pump
 Pump designation : PE6P120A320RS7230X
 EP type number : 0 412 626 868
 Governor
 Governor design. : RQV250...1000PA990K
 Governor no. : 0 421 815 274_g

Customer-spec. information
 Customer : DAF

Engine : WS 295 L

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 089
 Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 980
 Rack travel in mm : 13.90...14.00
 Del. quantity cm³/ : 25.8...26.0
 100 s: (25.5...26.3)
 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 250.0
 Rack travel in mm : 5.8...6.2
 Del. quantity cm³/ : 1.4...2.0
 100 s: (1.1...2.3)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.30...1.70
 2nd speed rpm : 285
 travel mm : 2.10...2.50
 3rd speed rpm : 685
 travel mm : 6.20...6.60
 4th speed rpm : 1030
 travel mm : 9.60...10.00
 5th speed rpm : 1145
 travel mm : 11.20...11.40

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1130
 Rack travel in mm : 12.20...14.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 980
 Aneroid pressure h: 1500
 Del. quantity : 258.0...260.0
 1000 : (255.0...263.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 12.90
Speed rpm : 1030...1040
2nd rack travel in: 4.00
Speed rpm : 1135...1165
4th rack travel in: 1275
Speed rpm : 0.00...1.40

LOW IDLE 1

Control Lever
position degrees: 66...74

Testing:
Speed rpm : 150
Minimum rack travel: 7.00
Speed rpm : 250
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 320...380

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 400
Rack travel in m: 12.10...12.30
2nd speed rpm : 600
Rack travel in m: 12.30...12.40
3rd speed rpm : 825
Rack travel in m: 13.30...13.50
4th speed rpm : 980
Rack travel in m: 14.20...14.40

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 980
Pressure hPa : 1500
Rack travel mm : 13.90...14.00

Measurement
Speed 1/min : 980

1st pressure hPa : -
Rack travel in m: 8.70...8.90
2nd pressure hPa : 830
Rack travel in m: 12.60...12.70
3rd pressure hPa : 420
Rack travel in m: 9.70...9.90

F20

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 600
Del.quantity cm³/ : 255.0...259.0
1000 s: (252.0...262.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm³/ : 159.0...161.0
1000 s: (156.0...164.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.90
Speed rpm : 1030...1040

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.10...5.30

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
 Edition : 30.04.92
 Replaces : 02.92
 Test oil : ISO-4113
 Combination no. : 0 402 646 989
 Injection pump
 Pump designation : PE6P120A320RS7230Y
 EP type number : 0 412 626 867
 Governor
 Governor design. : RGV250...1000PA990K
 Governor no. : 0 421 815 274

Customer-spec. information
 Customer : DAF

Engine : WS 315 L

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 638 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 089
 Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 980
 Rack travel in mm : 14.50...14.60
 Del.quantity cm3/ : 27.3...27.5
 100 s : (27.0...27.8)
 Spread cm3 : 0.5
 100 s : (0.9)
 2nd speed rpm : 250.0
 Rack travel in mm : 5.8...6.2
 Del.quantity cm3/ : 1.4...2.0
 100 s : (1.1...2.3)
 Spread cm3 : 0.8
 100 s : (1.2)

**(B) Setting of injection pump
 with governor**

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.30...1.70
 2nd speed rpm : 285
 travel mm : 2.10...2.50
 3rd speed rpm : 685
 travel mm : 6.20...6.60
 4th speed rpm : 1030
 travel mm : 9.60...10.00
 5th speed rpm : 1145
 travel mm : 11.20...11.40

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1130
 Rack travel in mm : 12.20...14.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 980
 Aneroid pressure h: 1500
 Del.quantity : 273.0...275.0
 1000 : (270.0...278.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 13.50
Speed rpm : 1030...1040
2nd rack travel in: 4.00
Speed rpm : 1135...1165
4th rack travel in: 1275
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 66...74

Testing:
Speed rpm : 150
Minimum rack travel: 7.00
Speed rpm : 250
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 320...360

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 400
Rack travel in m: 12.90...13.10
2nd speed rpm : 600
Rack travel in m: 13.10...13.30
3rd speed rpm : 800
Rack travel in m: 14.00...14.20
4th speed rpm : 980
Rack travel in m: 14.80...15.00

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 980
Pressure hPa : 1500
Rack travel mm : 14.50...14.60

Measurement
Speed 1/min : 980

1st pressure hPa : -
Rack travel in m: 9.00...9.20
2nd pressure hPa : 760
Rack travel in m: 13.10...13.20
3rd pressure hPa : 350
Rack travel in m: 10.20...10.40

F22

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 600
Del. quantity cm³/ : 281.0...285.0
1000 s: (278.0...288.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 600
Del. quantity cm³/ : 168.0...170.0
1000 s: (165.0...173.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.50
Speed rpm : 1030...1040

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.10...5.30

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI
 Edition : 21.05.92
 Replaces : 04.92
 Test oil : ISO-4113
 Combination no. : 0 402 646 990
 Injection pump
 Pump designation : PE6P130A720RS7225
 EP type number : 0 412 636 817
 Governor
 Governor design. : RQV300...950PA975-2K
 Governor no. : 0 421 815 310

Customer-spec. information
 Customer : IVECO-UNIC

Engine : 8210.42.369

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 015
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 11.50...12.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 950
 Rack travel in mm : 11.90...12.00
 Del.quantity cm³/ : 25.2...25.4
 100 s : (24.9...25.7)
 Spread cm³ : 0.5
 100 s : (0.8)

2nd speed rpm : 300,0
 Rack travel in mm : 4.1...4.5
 Del.quantity cm³/ : 1.9...2.5
 100 s : (1.5...2.9)
 Spread cm³ : 0.8
 100 s : (1.2)

**(B) Setting of injection pump
 with governor**

GUIDE SLEEVE TRAVEL

1st speed rpm : 995
 travel mm : 8.40...8.60
 2nd speed rpm : 300
 travel mm : 1.00...1.40
 3rd speed rpm : 500
 travel mm : 3.30...3.90
 4th speed rpm : 700
 travel mm : 5.40...5.80
 5th speed rpm : 1400
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1175
 Rack travel in mm : 9.70...12.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 950
 Aneroid pressure h: 1000
 Del.quantity : 252.0...254.0
 1000 : (249.0...257.0)

Spread cm³ : 5.00
1000 : (8.00)

RATED SPEED

1st version
Control lever
position degrees: 112...120

Testing:
1st rack travel in: 10.90
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1080...1110
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 61...69

Testing:
Speed rpm : 100
Minimum rack travel: 5.80
Speed rpm : 300
Rack travel in mm : 4.20...4.40

CONSTANT REGULATION
Speed rpm : 340...460

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 950
Rack travel in m: 11.90...12.00
2nd speed rpm : 350
Rack travel in m: 11.30...11.50
3rd speed rpm : 700
Rack travel in m: 11.90...12.00
4th speed rpm : 550
Rack travel in m: 11.70...11.90

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 950
Pressure hPa : 1000
Rack travel mm : 11.90...12.00

Measurement
Speed 1/min : 950

1st pressure hPa : -
Rack travel in m: 9.50...9.70
2nd pressure hPa : 600
Rack travel in m: 10.80...10.90
3rd pressure hPa : 500

F24

Rack travel in m: 10.00...10.20

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 700
Del.quantity cm³/ : 259.0...265.0
1000 s: (256.0...268.0)
Aneroid pressure h: 1000
Speed rpm : 550
Del.quantity cm³/ : 261.0...267.0
1000 s: (258.0...270.0)
Aneroid pressure h: -
Speed rpm : 550
Del.quantity cm³/ : 186.0...188.0
1000 s: (183.0...191.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.90
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...170.0
1000 s: (126.0...174.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.10...4.50
Del.quantity cm³/ : 19.0...25.0
1000 s: (15.0...29.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

:
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
Edition : 03.07.92
Replaces : 03.92
Test oil : ISO-4113
Combination no. : 0 402 646 991
Injection pump
Pump designation : PE6P120A320RS7210Y
EP type number : 0 412 626 859
Governor
Governor design. : RQV275...1000PA939-2
Governor no. : 0 421 813 986

Customer-spec. information
Customer : DAF

Engine : WS 222 L

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42
Overflow valve : 1 417 413 025
Inlet press., bar : 1.50
Test nozzle holder assembly : 1 688 901 105
Opening pressure, bar : 207...210
Orifice plate diameter mm : 0,8
Test lines : 1 680 750 089
Outside diameter x Wall thickness x Length mm : 8.00x2.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
Prestroke mm : 5.30...5.40
: (5.25...5.45)
Rack travel in mm : 14.00...15.00

F25

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10
& maximum rack tra: 13.2...14.2
Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 850
Rack travel in mm : 13.70...13.80
Del. quantity cm3/ : 19.5...19.7
100 s: (19.2...20.0)
Spread cm3 : 0.5
100 s: (0.9)
2nd speed rpm : 275.0
Rack travel in mm : 6.2...6.6
Del. quantity cm3/ : 1.4...2.0
100 s: (1.1...2.3)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045
travel mm : 7.70...8.20
2nd speed rpm : 275
travel mm : 1.10...1.60
3rd speed rpm : 380
travel mm : 2.40...2.90
4th speed rpm : 675
travel mm : 4.20...4.70
5th speed rpm : 1310
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1150
Rack travel in mm : 11.40...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 850
Aneroid pressure h: 1000
Del. quantity : 195.0...197.0
1000 : (192.0...200.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 115...123

Testing:
1st rack travel in: 12.70
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1145...1175
4th rack travel in: 1250
Speed rpm : 0.00...1.40

LOW IDLE 1
Control lever
position degrees: 78...86

Testing:
Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 275
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION
Speed rpm : 300...350

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 13.70...13.80

Measurement
Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 11.50...11.70
2nd pressure hPa : 400
Rack travel in m: 13.20...13.30
3rd pressure hPa : 230
Rack travel in m: 12.00...12.20

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -

Speed rpm : 600
Del. quantity cm³/ : 139.0...141.0
1000 s: (136.0...144.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.70
Speed rpm : 1040...1050

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.90...5.10

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.05.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 993
 Injection pump
 Pump designation : PE6P120A320LS7852
 EP type number : 0 412 626 871
 Governor
 Governor design. : RQ300/1050PA1030-3
 Governor no. : 0 421 801 653

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kw : 250.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

F27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.00...14.20

Del. quantity cm³/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del. quantity : 234.0...236.0

1000 : (231.0...239.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.90

Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.9

Testing:

Speed rpm : 200
Minimum rack trave: 8.30
Speed rpm : 300
Rack travel in mm : 5.60...6.20
Rack travel in mm : 2.00
Speed rpm : 370...410

TORQUE CONTROL

2nd speed rpm : 1050
Rack travel in m: 13.80...14.00
3rd speed rpm : 800
Rack travel in m: 14.00...14.20

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.50...10.70

Measurement

Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 11.20...11.40
2nd pressure hPa : 700
Rack travel in m: 13.30...13.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1050
Del.quantity cm3/ : 223.5...226.5
1000 s: (220.5...229.5)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.90
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 60.0...90.0
1000 s: (56.0...94.0)
Rack travel in mm : 10.50...10.70

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 22.05.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 994
 Injection pump
 Pump designation : PE6P120A320LS7852
 EP type number : 0 412 626 871
 Governor
 Governor design. : RQ300/950PA1032-3
 Governor no. : 0 421 801 654

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 105

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.00...14.20

Del.quantity cm³/ : 23.4...23.6

100 s : (23.1...23.9)

Spread cm³ : 0.5

100 s : (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del.quantity cm³/ : 1.6...2.2

100 s : (1.3...2.5)

Spread cm³ : 0.6

100 s : (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 234.0...236.0

1000 : (231.0...239.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.10

Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1200
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.9

Testing:

Speed rpm : 200
Minimum rack travel: 8.30
Speed rpm : 300
Rack travel in mm : 5.60...6.20
Rack travel in mm : 2.00
Speed rpm : 370...410

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : -
Rack travel mm : 10.50...10.70

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 11.20...11.40
2nd pressure hPa : 700
Rack travel in m: 13.30...13.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 950
Del.quantity cm³/ : 230.5...233.5
1000 s: (227.5...236.5)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.10
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 10.50...10.70

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 03.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 996
 Injection pump
 Pump designation : PE6P120A320LS7852
 EP type number : 0 412 626 871
 Governor
 Governor design. : RQ300/1050PA1031-4
 Governor no. : 0 421 801 656

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.90...14.10

Del.quantity cm³/ : 23.7...23.9

100 s: (23.4...24.2)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 237.0...239.0

1000 : (234.0...242.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.9

Testing:

Speed rpm : 200
Minimum rack trave: 8.10
Speed rpm : 300
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.90...14.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.50...10.70
2nd pressure hPa : 275
Rack travel in m: 11.20...11.40
3rd pressure hPa : 580
Rack travel in m: 12.90...13.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1050
Del.quantity cm3/ : 225.0...228.0
1000 s: (223.0...231.0)

Spread cm3 : 8.00
1000 s: (12.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 133.0...135.0
1000 s: (130.0...138.0)

Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1090...1105

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 03.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 997
 Injection pump
 Pump designation : PE6P120A320LS7852
 EP type number : 0 412 626 871
 Governor
 Governor design. : RQV300...950PA1033-5
 Governor no. : 0 421 814 008

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.90...14.10

Del. quantity cm³/ : 23.7...23.9

100 s: (23.4...24.2)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.00...1.50

2nd speed rpm : 575

travel mm : 4.20...4.70

3rd speed rpm : 790

travel mm : 5.90...6.40

4th speed rpm : 1010

travel mm : 8.00...8.50

5th speed rpm : 1200

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1060

Rack travel in mm : 11.70...14.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 237.0...239.0
1000 : (234.0...242.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:

1st rack travel in: 13.00
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1200
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 80...88

Testing:

Speed rpm : 200
Minimum rack travel: 8.10
Speed rpm : 300
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00
Speed rpm : 410...470

CONSTANT REGULATION

Speed rpm : 290...360

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.90...14.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.50...10.70
2nd pressure hPa : 275
Rack travel in m: 11.20...11.40
3rd pressure hPa : 580
Rack travel in m: 12.90...13.10

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

G06

1st version

Aneroid pressure h: 1000
Speed rpm : 950
Del.quantity cm3/ : 231.0...234.0
1000 s: (228.0...237.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: --
Speed rpm : 500
Del.quantity cm3/ : 133.0...135.0
1000 s: (130.0...138.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 990...1000

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 22.05.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 998
 Injection pump
 Pump designation : PE6P120A320LS7852
 EP type number : 0 412 626 871
 Governor
 Governor design. : RQV300...1050PA1033
 -6
 Governor no. : 0 421 814 009

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1
 Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600
 Rack travel in mm : 13.90...14.10
 Del. quantity cm³/ : 23.7...23.9
 100 s: (23.4...24.2)
 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.6...6.2
 Del. quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.6
 100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.50...1.00
 2nd speed rpm : 575
 travel mm : 4.30...4.80
 3rd speed rpm : 625
 travel mm : 4.80...5.30
 4th speed rpm : 830
 travel mm : 5.90...6.40
 5th speed rpm : 1190
 travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1150
 Rack travel in mm : 11.70...14.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 1000
Del. quantity : 237.0...239.0
1000 : (234.0...242.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 13.00
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1155...1185
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 78...86

Testing:
Speed rpm : 200
Minimum rack trave: 8.70
Speed rpm : 300
Rack travel in mm : 5.60...6.20
Rack travel in mm : 2.00

CONSTANT REGULATION
Speed rpm : 575...625

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.50...10.70

Measurement
Speed 1/min : 500

1st pressure hPa : 275
Rack travel in m: 11.20...11.40
2nd pressure hPa : 580
Rack travel in m: 12.90...13.10

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

G08

1st version
Aneroid pressure h: 1000
Speed rpm : 1050
Del. quantity cm³/ : 225.0...228.0
1000 s: (222.0...231.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 133.0...135.0
1000 s: (130.0...138.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.00
Speed rpm : 1090...1105

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 30.04.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 817
 Injection pump
 Pump designation : PE8P120A320LS7801-10
 EP type number : 0 412 628 851
 Governor
 Governor design. : RQ300/1050PA762-16
 Governor no. : 0 421 801 620

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 260.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 14.00...14.20

Del.quantity cm³/ : 20.4...20.6

100 s: (20.1...20.9)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.4

Del.quantity cm³/ : 1.3...1.9

100 s: (1.0...2.2)

Spread cm³ : 0.5

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 500

Aneroid pressure h: 1050

Del.quantity : 204.0...206.0

1000 : (201.0...209.0)

Spread cm³ : 4.00

1000 : (7.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.70
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 13.00
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.00...6.40
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.75
2nd speed rpm : 1050
Rack travel in m: 12.70...12.90
3rd speed rpm : 500
Rack travel in m: 14.00...14.20

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : -
Rack travel mm : 11.40...11.70

Measurement

Speed 1/min : 600
1st pressure hPa : 300
Rack travel in m: 12.30...12.50
2nd pressure hPa : 400
Rack travel in m: 13.30...13.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1050
Speed rpm : 1050
Del.quantity cm³/ : 178.0...181.0
1000 s: (175.0...184.0)

Spread cm³ : 7.00
1000 s: (10.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 146.0...148.0
1000 s: (143.0...151.0)
Spread cm³ : 7.00
1000 s: (10.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 175.0...190.0
1000 s: (171.0...194.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 30.04.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 825
 Injection pump
 Pump designation : PE8P120A320LS7801-10
 EP type number : 0 412 628 851
 Governor
 Governor design. : RQV300...1050PA797
 -34
 Governor no. : 0 421 813 973
 Customer-spec. information
 Customer : MERCEDES-BENZ
 Engine : OM442 A
 1st version kW : 260.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Overflow
 quantity min. 1/h: 100...120
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1
 Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 500
 Rack travel in mm : 14.00...14.20
 Del. quantity cm³/ : 20.4...20.6
 100 s: (20.1...20.9)
 Spread cm³ : 0.4
 100 s: (0.7)
 2nd speed rpm : 300.0
 Rack travel in mm : 6.0...6.4
 Del. quantity cm³/ : 1.3...1.9
 100 s: (1.0...2.2)
 Spread cm³ : 0.5
 100 s: (0.8)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.20...1.40
 2nd speed rpm : 600
 travel mm : 4.90...5.10
 3rd speed rpm : 1075
 travel mm : 7.40...7.60
 4th speed rpm : 1100
 travel mm : 8.00...8.20
 5th speed rpm : 1150
 travel mm : 9.00...9.20

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1125
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 500
Aneroid pressure h: 1050
Del. quantity : 204.0...206.0
1000 : (201.0...209.0)
Spread cm3 : 4.00
1000 : (7.00)

RATED SPEED

1st version

Control lever
position degrees: 114...122

Testing:

1st rack travel in: 11.70
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1155...1185
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 80...88

Testing:

Speed rpm : 200
Minimum rack trave: 7.70
Speed rpm : 300
Rack travel in mm : 6.00...6.40

CONSTANT REGULATION

Speed rpm : 300...450

TORQUE CONTROL

Dimension a mm : 1.40
2nd speed rpm : 1050
Rack travel in m: 12.70...12.90
3rd speed rpm : 500
Rack travel in m: 14.00...14.20

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : -
Rack travel mm : 11.40...11.70

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 12.30...12.50
2nd pressure hPa : 400

Rack travel in m: 13.30...13.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1050
Speed rpm : 1050
Del. quantity cm3/ : 178.0...181.0
1000 s: (175.0...184.0)
Spread cm3 : 7.00
1000 s: (10.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm3/ : 146.0...148.0
1000 s: (143.0...151.0)
Spread cm3 : 7.00
1000 s: (10.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.70
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm3/ : 175.0...190.0
1000 s: (171.0...194.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA
 Edition : 30.04.92
 Replaces : 11.91
 Test oil : ISO-4113
 Combination no. : 0 402 648 874
 Injection pump
 Pump designation : PE8P120A920/4LS7189
 EP type number : 0 412 628 840
 Governor
 Governor design. : RQV200...950PA736-8
 Governor no. : 0 421 813 815

Customer-spec. information
 Customer : SCANIA

Engine : DSC14 10

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 104
 Opening
 pressure, bar : 250...253
 Orifice plate
 diameter mm : 0,7
 Test lines : 1 680 750 008
 Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 7- 3- 4- 5-
 6- 8

Phasing : 0-45-90-135-180-225--
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 13.00...13.10
 Del. quantity cm³/ : 23.7...23.9
 100 s : (23.4...24.2)
 Spread cm³ : 0.7
 100 s : (1.0)

2nd speed rpm : 250.0
 Rack travel in mm : 4.4...4.8
 Del. quantity cm³/ : 1.2...1.6
 100 s : (-)
 Spread cm³ : 0.3
 100 s : (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.40...1.80
 2nd speed rpm : 350
 travel mm : 2.30...2.90
 3rd speed rpm : 650
 travel mm : 4.40...5.00
 4th speed rpm : 995
 travel mm : 7.70...7.90
 5th speed rpm : 1115
 travel mm : 9.20...9.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1150
 Rack travel in mm : 7.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 900
 Del. quantity : 237.0...239.0
 1000 : (234.0...242.0)

Spread cm³ : 7.00
1000 : (10.00)

RATED SPEED

1st version
Control lever
position degrees: 90...98

Testing:
1st rack travel in: 12.00
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1100...1130
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 41...49

Testing:
Speed rpm : 100
Minimum rack travel: 6.00
Speed rpm : 250
Rack travel in mm : 4.40...4.60
Rack travel in mm : 2.00
Speed rpm : 375...435

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.00...13.10

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.80...10.20
2nd pressure hPa : 525
Rack travel in m: 11.70...11.80
3rd pressure hPa : 320
Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 950
Del.quantity cm³/ : 220.0...228.0
1000 s: (218.0...230.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 142.0...146.0
1000 s: (140.0...148.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.00
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...180.0
Rack travel in mm : 9.80...10.20

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.40...4.60

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

Start-of-delivery setting with RO80
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 12,8 o
 Edition : 05.08.92
 Replaces : 20.03.92
 Test oil : ISO-4113

Combination no. : 0 402 648 893

Injection pump
 Pump designation : PE8P120A320LS7835
 EP type number : 0 412 628 847
 Governor
 Governor design. : RQ300/950PA971-2
 Governor no. : 0 421 801 548

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM402 A

1st version kW : 280.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.10...14.30

Del.quantity cm³/ : 22.5...22.7
 100 s: (22.2...23.0)

Spread cm³ : 0.6
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.9...6.5
 Del.quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.6
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 600
 Aneroid pressure h: 1000
 Del.quantity : 225.0...227.0
 1000 : (222.0...230.0)
 Spread cm³ : 6.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.90

Speed rpm : 990...1005

2nd rack travel in: 4.00

Speed rpm : 1070...1100

4th rack travel in: 1150

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.2

Testing:

Speed rpm : 200

Minimum rack travel: 7.50

Speed rpm : 300

Rack travel in mm : 5.90...6.50

Rack travel in mm : 2.00

Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.50

2nd speed rpm : 950

Rack travel in m: 13.90...14.10

3rd speed rpm : 800

Rack travel in m: 14.70...14.90

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 600

Pressure hPa : 1000

Rack travel mm : 14.10...14.30

Measurement

Speed 1/min : 600

1st pressure hPa : 250

Rack travel in m: 10.30...10.50

2nd pressure hPa : 650

Rack travel in m: 13.10...13.30

3rd pressure hPa : 1200

Rack travel in m: 14.20...14.40 *

4th pressure hPa : -

Rack travel in m: 10.10...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500

Speed rpm : 950

Del.quantity cm³/ : 216.0...219.0

1000 s: (213.0...222.0)

Spread cm³ : 8.00

1000 s: (12.0)

Aneroid pressure h: 1500

Speed rpm : 750

Del.quantity cm³/ : 234.0...238.0

1000 s: (231.0...241.0)

Spread cm³ : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm³/ : 132.0...134.0

1000 s: (129.0...137.0)

Spread cm³ : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.90

Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 40.0...70.0

1000 s: (36.0...74.0)

Rack travel in mm : 10.10...10.40

Speed rpm : 100

Del.quantity cm³/ : 210...230 **

1000 s: (200...240)

Remarks:

:

* Increase in control-rod travel with respect to setting at least 0.1 mm

** Value only applies to governor with no TAS

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 893
 Injection pump
 Pump designation : PE8P120A320LS7835-10
 EP type number : 0 412 628 853
 Governor
 Governor design. : RQ300/950PA971-2
 Governor no. : 0 421 801 548

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 750
 Rack travel in mm : 14.60...14.80
 Del. quantity cm³/ : 23.0...23.2
 100 s: (22.7...23.5)
 Spread cm³ : 0.6
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.9...6.5
 Del. quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.6
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 750
 Aneroid pressure h: 1200
 Del. quantity : 230.0...232.0
 1000 : (227.0...235.0)
 Spread cm³ : 6.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1200
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 6.10...6.30
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.50
2nd speed rpm : 950
Rack travel in m: 13.90...14.10
3rd speed rpm : 800
Rack travel in m: 14.60...14.80

Aneroid/Altitude
Compensator Test

1st version:

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 14.60...14.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.10...10.40
2nd pressure hPa : 250
Rack travel in m: 10.60...10.70
3rd pressure hPa : 700
Rack travel in m: 13.30...13.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 950
Del.quantity cm³/ : 216.0...219.0
1000 s: (213.0...222.0)
Spread cm³ : 8.00
1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 40.0...70.0
1000 s: (36.0...74.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 893X
 Injection pump
 Pump designation : PE8P120A320LS7835-10
 EP type number : 0 412 628 853
 Governor
 Governor design. : RQ300/950PA971-2
 Governor no. : 0 421 801 548

Cust. part no. : 0200740602

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness : 8.00x2.50x1000
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 14.60...14.80

Del.quantity cm³/ : 23.0...23.2
 100 s: (22.7...23.5)

Spread cm³ : 0.6
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.9...6.5
 Del.quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.6
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 750
 Aneroid pressure h: 1200
 Del.quantity : 230.0...232.0
 1000 : (227.0...235.0)
 Spread cm³ : 6.00
 1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1200
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 6.10...6.30
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.50
2nd speed rpm : 950
Rack travel in m: 13.90...14.10
3rd speed rpm : 800
Rack travel in m: 14.60...14.80

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 14.60...14.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.10...10.40
2nd pressure hPa : 250
Rack travel in m: 10.60...10.70
3rd pressure hPa : 700
Rack travel in m: 13.30...13.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

G20

Speed rpm : 950
Del. quantity cm³/ : 216.0...219.0
1000 s: (213.0...222.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 40.0...70.0
1000 s: (36.0...74.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 894
 Injection pump
 Pump designation : PE8P120A320LS7E35-10
 EP type number : 0 412 628 853
 Governor
 Governor design. : RQV300...950PA797-18
 Governor no. : 0 421 813 886

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kw : 280.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 14.60...14.80

Del. quantity cm³/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.5

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.00...1.50

2nd speed rpm : 567
 travel mm : 4.40...4.90

3rd speed rpm : 780
 travel mm : 6.10...6.60

4th speed rpm : 1009
 travel mm : 8.30...8.80

5th speed rpm : 1092
 travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 980

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 750
Aneroid pressure h: 1200
Del. quantity : 230.0...232.0
1000 : (227.0...235.0)
Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 122...130

Testing:
1st rack travel in: 13.00
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1200
Speed rpm : 0.00...1.40

LOW IDLE
Control lever
position degrees: 80...88

Testing:
Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 6.10...6.30

CONSTANT REGULATION
Speed rpm : 250...360

TORQUE CONTROL
Dimension a mm : 0.50
2nd speed rpm : 950
Rack travel in m: 13.90...14.10
3rd speed rpm : 800
Rack travel in m: 14.60...14.80

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 14.60...14.80

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.10...10.40
2nd pressure hPa : 250
Rack travel in m: 10.60...10.70

3rd pressure hPa : 700
Rack travel in m: 13.30...13.50

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 950
Del. quantity cm³/ : 216.0...219.0
1000 s: (213.0...222.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.00
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 200.0...230.0
1000 s: (196.0...234.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 894X
 Injection pump
 Pump designation : PE8P120A320LS7835-10
 EP type number : 0 412 628 853
 Governor
 Governor design. : RQV300...950PA797-18
 Governor no. : 0 421 813 886

Cust. part no. : 0200740702

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 14.60...14.80

Del.quantity cm³/ : 23.0...23.2
 100 s: (22.7...23.5)

Spread cm³ : 0.6
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.9...6.5
 Del.quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.6
 100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.00...1.50
 2nd speed rpm : 567
 travel mm : 4.40...4.90
 3rd speed rpm : 780
 travel mm : 6.10...6.60
 4th speed rpm : 1009
 travel mm : 8.30...8.80
 5th speed rpm : 1092
 travel mm : 9.80...10.30

GUIDE SLEEVE POSITION
 Control-lever position

Degree: -1
Speed rpm : 980
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 750
Aneroid pressure h: 1200
Del.quantity : 230.0...232.0
1000 : (227.0...235.0)
Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 122...130

Testing:
1st rack travel in: 13.00
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1200
Speed rpm : 0.00...1.40

LOW IDLE 1
Control lever
position degrees: 80...88

Testing:
Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 6.10...6.30

CONSTANT REGULATION
Speed rpm : 250...360

TORQUE CONTROL
Dimension a mm : 0.50
2nd speed rpm : 950
Rack travel in m: 13.90...14.10
3rd speed rpm : 800
Rack travel in m: 14.60...14.80

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 14.60...14.80

Measurement
Speed 1/min : 500

G24

1st pressure hPa : -
Rack travel in m: 10.10...10.30
2nd pressure hPa : 250
Rack travel in m: 10.60...10.70
3rd pressure hPa : 700
Rack travel in m: 13.30...13.50

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 950
Del.quantity cm³/ : 216.0...219.0
1000 s: (213.0...222.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.00
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 200.0...230.0
1000 s: (196.0...234.0)

Remarks: :

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 895
 Injection pump
 Pump designation : PE8P120A320LS7835-10
 EP type number : 0 412 628 853
 Governor
 Governor design. : RQ300/1050PA972-1
 Governor no. : 0 421 801 545

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 14.60...14.80

Del. quantity cm³/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.5

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1200

Del. quantity : 230.0...232.0

1000 : (227.0...235.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 13.00
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack travel: 7.80
Speed rpm : 300
Rack travel in mm : 6.10...6.30
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.50
2nd speed rpm : 1050
Rack travel in m: 13.90...14.10
3rd speed rpm : 800
Rack travel in m: 14.60...14.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 14.60...14.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.10...10.30
2nd pressure hPa : 250
Rack travel in m: 10.60...10.70
3rd pressure hPa : 700
Rack travel in m: 13.30...13.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm3/ : 214.0...217.0
1000 s: (211.0...220.0)
Spread cm3 : 8.00
1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 40.0...70.0
1000 s: (36.0...74.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 895X
 Injection pump
 Pump designation : PE8P120A320LS7835-10
 EP type number : 0 412 628 853
 Governor
 Governor design. : RQ300/1050PA972-1
 Governor no. : 0 421 801 545

Cust. part no. : 0180742102

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kw : 280.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 750
 Rack travel in mm : 14.60...14.80
 Del.quantity cm³/ : 23.0...23.2
 100 s: (22.7...23.5)
 Spread cm³ : 0.6
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.9...6.5
 Del.quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.6
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 750
 Aneroid pressure h: 1200
 Del.quantity : 230.0...232.0
 1000 : (227.0...235.0)
 Spread cm³ : 6.00
 1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack travel: 7.80
Speed rpm : 300
Rack travel in mm : 6.10...6.30
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.50
2nd speed rpm : 1050
Rack travel in m: 13.90...14.10
3rd speed rpm : 800
Rack travel in m: 14.60...14.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 14.60...14.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.10...10.40
2nd pressure hPa : 250
Rack travel in m: 10.60...10.70
3rd pressure hPa : 700
Rack travel in m: 13.30...13.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

G28

Speed rpm : 1050
Del.quantity cm³/ : 214.0...217.0
1000 s: (211.0...220.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.00
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 40.0...70.0
1000 s: (36.0...74.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 899
 Injection pump
 Pump designation : PE8P120A320LS7839-10
 EP type number : 0 412 628 855
 Governor
 Governor design. : RQ300/950PA971-5
 Governor no. : 0 421 801 559

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 370.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Overflow
 quantity min. 1/h: 100...120
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25.. 27
 Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 : 4- 1
 Phasing : 0-45-90-135-180-225-
 : 270-315
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600
 Rack travel in mm : 14.90...15.10
 Del. quantity cm³/ : 25.6...25.8
 100 s: (25.3...26.1)
 Spread cm³ : 0.6
 100 s: (0.9)
 2nd speed rpm : 300.0
 Rack travel in mm : 6.0...6.6
 Del. quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.6
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 600
 Aneroid pressure h: 1050
 Del. quantity : 256.0...258.0
 1000 : (253.0...261.0)
 Spread cm³ : 6.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 15.30
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1075...1105
4th rack travel in: 1150
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.3

Testing:

Speed rpm : 200
Minimum rack travel: 7.60
Speed rpm : 300
Rack travel in mm : 6.20...6.40
Rack travel in mm : 2.00
Speed rpm : 370...410

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1050
Rack travel mm : 14.90...15.10

Measurement

Speed 1/min : 600
1st pressure hPa : 350
Rack travel in m: 10.00...10.20
2nd pressure hPa : 800
Rack travel in m: 13.80...14.00
3rd pressure hPa : 1200
Rack travel in m: 15.00...15.10 *
4th pressure hPa : 1500
Rack travel in m: 15.60...15.80
5th pressure hPa : -
Rack travel in m: 9.30...9.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 2000
Speed rpm : 950
Del.quantity cm³/ : 279.0...282.0
1000 s: (276.0...285.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 2000
Speed rpm : 800

Del.quantity cm³/ : 283.0...287.0
1000 s: (280.0...290.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 136.0...138.0
1000 s: (133.0...141.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 15.30
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 9.30...9.60

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 902
 Injection pump
 Pump designation : PE8P120A320LS7839-10
 EP type number : 0 412 628 855
 Governor
 Governor design. : RQ300/1050PA972-5
 Governor no. : 0 421 801 564

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 370.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.90...15.10

Del.quantity cm³/ : 25.6...25.8
 100 s: (25.3...26.1)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.6

Del.quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1050

Del.quantity : 256.0...258.0
 1000 : (253.0...261.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 15.20
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.3

Testing:

Speed rpm : 200
Minimum rack trave: 7.80
Speed rpm : 300
Rack travel in mm : 6.20...6.40
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?
2nd speed rpm : 1050
Rack travel in m: 16.20...16.40
3rd speed rpm : 800
Rack travel in m: 16.40...16.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1050
Rack travel mm : 14.90...15.10

Measurement

Speed 1/min : 600
1st pressure hPa : 350
Rack travel in m: 10.00...10.20
2nd pressure hPa : 800
Rack travel in m: 13.80...14.00
3rd pressure hPa : 1200
Rack travel in m: 15.00...15.10 *
4th pressure hPa : 1500
Rack travel in m: 15.60...15.80
5th pressure hPa : -
Rack travel in m: 9.30...9.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 2000
Speed rpm : 1050

H04

Del.quantity cm3/ : 271.0...274.0
1000 s: (268.0...277.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 2000
Speed rpm : 800
Del.quantity cm3/ : 276.0...280.0
1000 s: (273.0...283.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 136.0...138.0
1000 s: (133.0...141.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 15.20
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 9.30...9.60

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.07.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 648 907

Injection pump
 Pump designation : PE8P120A320LS7839-10
 EP type number : 0 412 628 855
 Governor
 Governor design. : RQV300...950PA797-22
 Governor no. : 0 421 813 909

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 370.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)

Rack travel in mm : 20.00...21.00

Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.90...15.10

Del. quantity cm³/ : 25.6...25.8

100 s: (25.3...26.1)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.6

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.00...1.50

2nd speed rpm : 617
 travel mm : 5.00...5.50

3rd speed rpm : 780
 travel mm : 6.10...6.60

4th speed rpm : 1010
 travel mm : 8.30...8.80

5th speed rpm : 1092
 travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1020

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
Aneroid pressure h: 1050
Del. quantity : 256.0...258.0
1000 : (253.0...261.0)
Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 118...126

Testing:

1st rack travel in: 15.00
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1100...1130
4th rack travel in: 1200
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 82...90

Testing:

Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.20...6.40

CONSTANT REGULATION

Speed rpm : 300...400

Aneroid/Altitude

Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1050
Rack travel mm : 14.90...15.10

Measurement

Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 10.00...10.20
2nd pressure hPa : 800
Rack travel in m: 13.80...14.00
3rd pressure hPa : 1200
Rack travel in m: 15.00...15.10 *
4th pressure hPa : 1500
Rack travel in m: 15.60...15.80
5th pressure hPa : -
Rack travel in m: 9.30...9.60

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 2000
Speed rpm : 950
Del. quantity cm³/ : 279.0...282.0
1000 s: (276.0...285.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 2000
Speed rpm : 800
Del. quantity cm³/ : 286.0...290.0
1000 s: (283.0...286.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 136.0...138.0
1000 s: (133.0...141.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 15.00
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 275.0...295.0
1000 s: (271.0...299.0)

Remarks:

:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 u 2
 Edition : 30.04.92
 Replaces : 11.91
 Test oil : ISO-4113

Combination no. : 0 402 648 909

Injection pump
 Pump designation : PE8P120A320LS7840
 EP type number : 0 412 628 850
 Governor
 Governor design. : RQ300/950PA971-6
 Governor no. : 0 421 801 575

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 250.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.40...13.60

Del.quantity cm3/ : 20.7...20.9

100 s: (20.4...21.2)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 7.0...7.4

Del.quantity cm3/ : 1.6...2.2
 100 s: (1.3...2.5)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 800

Del.quantity : 207.0...209.0

1000 : (204.0...212.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.60

Speed rpm : 990...1005

2nd rack travel in: 4.00

Speed rpm : 1070...1100

4th rack travel in: 1150

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.5

Testing:

Speed rpm : 200

Minimum rack travel: 7.60

Speed rpm : 300

Rack travel in mm : 6.20...6.80

Rack travel in mm : 2.00

Speed rpm : 380...420

TORQUE CONTROL

2nd speed rpm : 950

Rack travel in m: 13.50...13.70

3rd speed rpm : 800

Rack travel in m: 14.10...14.30

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 600

Pressure hPa : 800

Rack travel mm : 13.40...13.60

Measurement

Speed 1/min : 600

1st pressure hPa : 345

Rack travel in m: 11.70...11.90

2nd pressure hPa : 600

Rack travel in m: 12.90...13.10

3rd pressure hPa : 1050

Rack travel in m: 13.60...13.70

4th pressure hPa : 1100

Rack travel in m: 13.90...14.10

5th pressure hPa : -

Rack travel in m: 10.90...11.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500

Speed rpm : 950

Del.quantity cm³/ : 208.5...211.5

1000 s: (205.5...214.5)

Spread cm³ : 8.00

1000 s: (12.0)

Aneroid pressure h: 1500

Speed rpm : 800

Del.quantity cm³/ : 225.0...229.0

1000 s: (221.0...232.0)

Spread cm³ : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm³/ : 127.0...129.0

1000 s: (124.0...132.0)

Spread cm³ : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.60

Speed rpm : 990...1005

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 30.04.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 910
 Injection pump
 Pump designation : PE8P120A320LS7840-10
 EP type number : 0 412 628 856
 Governor
 Governor design. : RQV300..950PA797-26
 Governor no. : 0 421 813 915

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 250.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 3- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600
 Rack travel in mm : 13.40...13.60
 Del. quantity cm³/ : 20.7...20.9
 100 s: (20.4...21.2)
 Spread cm³ : 0.6
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 6.9...7.5
 Del. quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.00...1.50
 2nd speed rpm : 617
 travel mm : 5.00...5.50
 3rd speed rpm : 780
 travel mm : 6.10...6.60
 4th speed rpm : 1009
 travel mm : 8.30...8.80
 5th speed rpm : 1092
 travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1020
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 800
Del. quantity : 207.0...209.0
1000 : (204.0...212.0)
Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:
1st rack travel in: 12.60
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 82...90

Testing:
Speed rpm : 200
Minimum rack travel: 8.50
Speed rpm : 300
Rack travel in mm : 6.90...7.50

CONSTANT REGULATION
Speed rpm : 300...450

TORQUE CONTROL
Dimension a mm : 0.60
2nd speed rpm : 950
Rack travel in m: 13.50...13.70
3rd speed rpm : 800
Rack travel in m: 14.10...14.30

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 13.40...13.60

Measurement
Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 11.70...11.90
2nd pressure hPa : 650
Rack travel in m: 12.90...13.10

H10

3rd pressure hPa : 1000
Rack travel in m: 13.60...13.70
4th pressure hPa : 1100
Rack travel in m: 13.90...14.10
5th pressure hPa : -
Rack travel in m: 10.90...11.10

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 950
Del. quantity cm³/ : 208.5...211.5
1000 s: (205.5...214.5)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1500
Speed rpm : 800
Del. quantity cm³/ : 225.0...229.0
1000 s: (221.0...232.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 127.0...129.0
1000 s: (124.0...132.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.60
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 210.0...230.0
1000 s: (206.0...234.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 911
 Injection pump
 Pump designation : PE8P120A320LS7839-10
 EP type number : 0 412 628 855
 Governor
 Governor design. : RQV300...1050PA797
 -27
 Governor no. : 0 421 813 916

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 370.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.90...15.10

Del. quantity cm³/ : 25.6...25.8

100 s: (25.3...26.1)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.6

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.00...1.50

2nd speed rpm : 558

travel mm : 4.30...4.80

3rd speed rpm : 820

travel mm : 5.90...6.40

4th speed rpm : 1108

travel mm : 8.30...8.80

5th speed rpm : 1183

travel mm : 8.30...8.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
Aneroid pressure h: 1050
Del.quantity : 256.0...258.0
1000 : (253.0...261.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 118...126

Testing:

1st rack travel in: 15.20
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 76...84

Testing:

Speed rpm : 200
Minimum rack trave: 6.80
Speed rpm : 300
Rack travel in mm : 6.20...6.40

CONSTANT REGULATION

Speed rpm : 300...450

TORQUE CONTROL

Dimension a mm : 0.20
2nd speed rpm : 1050
Rack travel in m: 16.20...16.40
3rd speed rpm : 800
Rack travel in m: 16.40...16.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1050
Rack travel mm : 14.90...15.10

Measurement

Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 10.00...10.20
2nd pressure hPa : 800

H12

Rack travel in m: 13.80 ..14.00
3rd pressure hPa : 1200
Rack travel in m: 15.00...15.10 *
4th pressure hPa : 1600
Rack travel in m: 15.60...15.80
5th pressure hPa : -
Rack travel in m: 9.30...9.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 2000
Speed rpm : 1050
Del.quantity cm3/ : 271.0...274.0
1000 s: (268.0...277.0)
Spread cm3 : 8.00
1000 s: (12.0)

Aneroid pressure h: 2000
Speed rpm : 800
Del.quantity cm3/ : 276.0...280.0
1000 s: (273.0...283.0)
Spread cm3 : 8.00
1000 s: (12.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 136.0...138.0
1000 s: (133.0...141.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 15.20
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 275.0...295.0
1000 s: (271.0...299.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 17,2 f
Edition : 31.07.92
Replaces : 03.92
Test oil : ISO-4113

Combination no. : 0 402 648 912

Injection pump
Pump designation : PE8P130A920/5LS7841
EP type number : 0 412 638 803
Governor
Governor design. : RQV300...950PA994K
Governor no. : 0 421 815 275

Customer-spec. information
Customer : IVECO-FIAT

Engine : 8280.42.050

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
Rack travel in mm : 11.50...12.50

H13

Firing order : 1- 8- 4- 3- 6- 5-
 7- 2

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.90...6.10
& maximum rack tra: 11.5...12.5
Difference ° CS : 1.25...2.75

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 10.70...10.80

Del.quantity cm³/ : 20.9...21.1
100 s: (20.6...21.4)

Spread cm³ : 0.8

2nd speed rpm : 300.0
Rack travel in mm : 4.4...4.8
Del.quantity cm³/ : 2.2...2.8
100 s: (1.9...3.1)
Spread cm³ : 0.5

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 995
travel mm : 10.20...10.40
2nd speed rpm : 300
travel mm : 2.00...2.30
3rd speed rpm : 700
travel mm : 5.80...6.20
4th speed rpm : 1200
travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1000
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 550
Aneroid pressure h: 900

Del.quantity : 209.0...211.0
1000 : (206.0...214.0)
Spread cm³ : 8.00

RATED SPEED

1st version
Control lever
position degrees: 109...117

Testing:

1st rack travel in: 10.10
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1035...1065
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 58...66

Testing:

Speed rpm : 200
Minimum rack travel: 6.10
Speed rpm : 300
Rack travel in mm : 4.50...4.70

CONSTANT REGULATION

Speed rpm : 310...440

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 550
Rack travel in m: 10.70...10.80
2nd speed rpm : 950
Rack travel in m: 11.00...11.20
3rd speed rpm : 750
Rack travel in m: 10.90...11.20
4th speed rpm : 400
Rack travel in m: 10.40...10.70

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 950
Pressure hPa : 900
Rack travel mm : 10.50...10.60

Measurement

Speed 1/min : 950

1st pressure hPa : -
Rack travel in m: 7.40...7.60
2nd pressure hPa : 300
Rack travel in m: 9.90...10.00

3rd pressure hPa : 230
Rack travel in m: 8.80...9.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 950
Del.quantity cm³/ : 217.0...221.0
1000 s: (214.0...224.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 145.0...147.0
1000 s: (142.0...150.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 185.0...205.0
1000 s: (181.0...209.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.40...4.80
Del.quantity cm³/ : 22.0...28.0
1000 s: (19.0...31.0)
Spread cm³ : 5.00

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 17,2 f1
 Edition : 31.07.92
 Replaces : 03.92
 Test oil : ISO-4113
 Combination no. : 0 402 648 913
 Injection pump
 Pump designation : PE8P130A920/5LS7841
 EP type number : 0 412 638 803
 Governor
 Governor design. : RQV250...950PA994-1K
 Governor no. : 0 421 815 276

Customer-spec. information
 Customer : IVECO-FIAT

Engine : 8280.42.350 SPR

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 11.50...12.50

H15

Firing order : 1- 8- 4- 3- 6- 5-
 7- 2

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.90...6.10
 & maximum rack tra: 11.5...12.5
 Difference ° CS : 1.25...2.75

BASIC SETTING

1st speed rpm : 550
 Rack travel in mm : 10.90...11.00
 Del.quantity cm³/ : 22.8...23.0
 100 s: (22.5...23.3)
 Spread cm³ : 0.8
 100 s: (0.9)
 2nd speed rpm : 300.0
 Rack travel in mm : 4.0...4.4
 Del.quantity cm³/ : 2.2...2.8
 100 s: (1.9...3.1)
 Spread cm³ : 0.5
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 995
 travel mm : 10.20...10.40
 2nd speed rpm : 300
 travel mm : 2.00...2.30
 3rd speed rpm : 700
 travel mm : 5.80...6.20
 4th speed rpm : 1200
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1040
 Rack travel in mm : 9.00...11.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550
Aneroid pressure h: 900
Del.quantity : 228.0...230.0
1000 : (225.0...233.0)
Spread cm³ : 8.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 110...118

Testing:

1st rack travel in: 10.30
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1045...1075
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 58...66

Testing:

Speed rpm : 200
Minimum rack travel: 5.70
Speed rpm : 300
Rack travel in mm : 4.10...4.30

CONSTANT REGULATION

Speed rpm : 310...440

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 550
Rack travel in m: 10.90...11.00
2nd speed rpm : 950
Rack travel in m: 11.40...11.60
3rd speed rpm : 650
Rack travel in m: 11.10...11.40
4th speed rpm : 400
Rack travel in m: 10.40...10.70

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 950
Pressure hPa : 900
Rack travel mm : 11.30...11.40

Measurement

Speed 1/min : 950

1st pressure hPa : -

H16

Rack travel in m: 7.10...7.30
2nd pressure hPa : 450
Rack travel in m: 10.60...10.70
3rd pressure hPa : 280
Rack travel in m: 8.30...8.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 950
Del.quantity cm³/ : 251.0...255.0
1000 s: (248.0...258.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 140.0...142.0
1000 s: (137.0...145.0)

BREAKAWAY

1st version

1st rack travel less than
full load rack tr: 10.30
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 185.0...205.0
1000 s: (181.0...209.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.00...4.40
Del.quantity cm³/ : 22.0...28.0
1000 s: (19.0...31.0)
Spread cm³ : 5.00
1000 s: (12.00)

Remarks:

:
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 914
 Injection pump
 Pump designation : PE8P120A320LS7835-10
 EP type number : 0 412 628 853
 Governor
 Governor design. : RQV300...1050PA797
 -30
 Governor no. : 0 421 813 921

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM402 A

1st version kW : 280.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1
 Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 750
 Rack travel in mm : 14.60...14.80
 Del.quantity cm³/ : 23.0...23.2
 100 s: (22.7...23.5)
 Spread cm³ : 0.6
 100 s: (0.9)
 2nd speed rpm : 300.0
 Rack travel in mm : 5.9...6.5
 Del.quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.6
 100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.00...1.50
 2nd speed rpm : 608
 travel mm : 4.80...5.30
 3rd speed rpm : 820
 travel mm : 5.90...6.40
 4th speed rpm : 1108
 travel mm : 8.10...8.60
 5th speed rpm : 1190
 travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1130
 Rack travel in mm : 12.60...15.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750
Aneroid pressure h: 1200
Del.quantity : 230.0...232.0
1000 : (227.0...235.0)
Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 118...126

Testing:

1st rack travel in: 13.00
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 13.00
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 82...90

Testing:

Speed rpm : 200
Minimum rack travel: 7.80
Speed rpm : 300
Rack travel in mm : 6.10...6.30

CONSTANT REGULATION

Speed rpm : 300...500

TORQUE CONTROL

Dimension a mm : 0.60
2nd speed rpm : 1050
Rack travel in m: 13.90...14.10
3rd speed rpm : 800
Rack travel in m: 14.60...14.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 14.60...14.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.10...10.40
2nd pressure hPa : 250

H18

Rack travel in m: 10.60...10.70
3rd pressure hPa : 700
Rack travel in m: 13.30...13.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm³/ : 214.0...217.0
1000 s: (211.0...220.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.00
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 200.0...230.0
1000 s: (196.0...234.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 25.06.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 648 914X

Injection pump
 Pump designation : PE8P120A320LS7835-10
 EP type number : 0 412 628 853
 Governor
 Governor design. : RQV300...1050PA797
 -30
 Governor no. : 0 421 813 921

Cust. part no. : 0180742202

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM402 A

1st version kW : 280.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 33...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 8- 7- 2- 6- 3- 5-
 Firing order : 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 14.60...14.80

Del.quantity cm³/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.5

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

**(B) Setting of injection pump
 with governor**

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.00...1.50

2nd speed rpm : 608
 travel mm : 4.80...5.30

3rd speed rpm : 820
 travel mm : 5.90...6.40

4th speed rpm : 1108
 travel mm : 8.10...8.60

5th speed rpm : 1190
 travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1
Speed rpm : 1130
Rack travel in mm : 12.60...15.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750
Aneroid pressure h: 1200
Del.quantity : 230.0...232.0
1000 : (227.0...235.0)
Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 118...126

Testing:

1st rack travel in: 13.00
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 82...90

Testing:

Speed rpm : 200
Minimum rack travel: 7.80
Speed rpm : 300
Rack travel in mm : 6.10...6.30

CONSTANT REGULATION

Speed rpm : 300...500

TORQUE CONTROL

Dimension a mm : 0.60
2nd speed rpm : 1050
Rack travel in m: 13.90...14.10
3rd speed rpm : 800
Rack travel in m: 14.60...14.80

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 14.60...14.80

Measurement

Speed 1/min : 500

H2O

1st pressure hPa : -
Rack travel in m: 10.10...10.40
2nd pressure hPa : 250
Rack travel in m: 10.60...10.70
3rd pressure hPa : 700
Rack travel in m: 13.30...13.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm³/ : 214.0...217.0
1000 s: (211.0...220.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.00
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 200.0...230.0
1000 s: (196.0...234.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 915
 Injection pump
 Pump designation : PE8P120A320LS7835-10
 EP type number : 0 412 628 853
 Governor
 Governor design. : RQ300/1050PA993-1
 Governor no. : 0 421 801 582

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 21000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

H21

Test pressure, bar: 25...27
 Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 : 4- 1

Phasing : 0-45-90-135-180-225-
 : 270-315
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 750
 Rack travel in mm : 14.60...14.80
 Del. quantity cm³/ : 23.0...23.2
 100 s : (22.7...23.5)
 Spread cm³ : 0.6
 100 s : (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.9...6.5
 Del. quantity cm³/ : 1.6...2.2
 100 s : (1.3...2.5)
 Spread cm³ : 0.6
 100 s : (1.0)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 750
 Aneroid pressure h: 1200
 Del. quantity : 230.0...232.0
 1000 : (227.0...235.0)
 Spread cm³ : 6.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600
 Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack travel: 7.80
Speed rpm : 300
Rack travel in mm : 6.10...6.30
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.50
2nd speed rpm : 1050
Rack travel in m: 13.90...14.10
3rd speed rpm : 800
Rack travel in m: 14.60...14.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 14.60...14.80

Measurement

Speed 1/min : 500
1st pressure hPa : -
Rack travel in m: 10.10...10.40
2nd pressure hPa : 250
Rack travel in m: 10.60...10.70
3rd pressure hPa : 700
Rack travel in m: 13.30...13.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050

Del.quantity cm3/ : 214.0...217.0
1000 s: (211.0...220.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.00
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...230.0
1000 s: (196.0...234.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 915X
 Injection pump
 Pump designation : PE8P12DA320LS7835-10
 EP type number : 0 412 628 853
 Governor
 Governor design. : RQ300/1050PA993-1
 Governor no. : 0 421 801 582

Cust. part no. : 0200747202

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 14.60...14.80

Del.quantity cm³/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.5

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1200

Del.quantity : 230.0...232.0

1000 : (227.0...235.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00
Speed rpm : 1090...1105
2nd rack travel in: 4.03
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300

Testing:

Speed rpm : 200
Minimum rack travel: 7.80
Speed rpm : 300
Rack travel in mm : 6.10...6.30
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.50
2nd speed rpm : 1050
Rack travel in m: 13.90...14.10
3rd speed rpm : 800
Rack travel in m: 14.60...14.80

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 14.60...14.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.10...10.40
2nd pressure hPa : 250
Rack travel in m: 10.60...10.70
3rd pressure hPa : 700
Rack travel in m: 13.30...13.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

H24

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del. quantity cm³/ : 214.0...217.0
1000 s: (211.0...220.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 200.0...230.0
1000 s: (196.0...234.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MF
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 648 917

Injection pump
 Pump designation : PE8P120A320LS7839-10
 EP type number : 0 412 628 855
 Governor
 Governor design. : RQ300/1050PA993-3
 Governor no. : 0 421 801 601

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM412 LA

1st version kW : 370.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. l/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.90...15.10

Del. quantity cm³/ : 25.6...25.8
 100 s: (25.3...26.1)

Spread cm³ : 0.6
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 6.0...6.6
 Del. quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.6
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 600
 Aneroid pressure h: 1050
 Del. quantity : 256.0...258.0
 1000 : (253.0...261.0)
 Spread cm³ : 6.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 15.20
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.3

Testing:

Speed rpm : 200
Minimum rack travel: 7.20
Speed rpm : 300
Rack travel in mm : 6.20...6.40
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?
2nd speed rpm : 1050
Rack travel in m: 16.20...16.40
3rd speed rpm : 800
Rack travel in m: 16.40...16.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1050
Rack travel mm : 14.90...15.10

Measurement

Speed 1/min : 600
1st pressure hPa : 350
Rack travel in m: 10.00...10.20
2nd pressure hPa : 800
Rack travel in m: 13.80...14.00
3rd pressure hPa : 1200
Rack travel in m: 15.00...15.10 *
4th pressure hPa : 1500
Rack travel in m: 15.60...15.80
5th pressure hPa : -
Rack travel in m: 9.30...9.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 2000
Speed rpm : 1050
Del.quantity cm³/ : 271.0...274.0
1000 s: (268.0...277.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 2000
Speed rpm : 800
Del.quantity cm³/ : 276.0...283.0
1000 s: (273.0...283.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 136.0...138.0
1000 s: (133.0...141.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 15.20
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 275.0...295.0
1000 s: (271.0...299.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 921
 Injection pump
 Pump designation : PE8P120A320LS7839-10
 EP type number : 0 412 628 855
 Governor
 Governor design. : RQ300/950PA993-8
 Governor no. : 0 421 801 618

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 370.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.90...15.10

Del. quantity cm³/ : 25.6...25.8

100 s: (25.3...26.1)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.6

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1050

Del. quantity : 256.0...258.0

1000 : (253.0...261.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 15.30
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1075...1105
4th rack travel in: 1150
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.3

Testing:

Speed rpm : 200
Minimum rack travel: 7.60
Speed rpm : 300
Rack travel in mm : 6.20...6.40
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1050
Rack travel mm : 14.90...15.10

Measurement

Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 10.00...10.20
2nd pressure hPa : 800
Rack travel in m: 13.80...14.00
3rd pressure hPa : 1200
Rack travel in m: 15.00...15.10 *
4th pressure hPa : 1500
Rack travel in m: 15.60...15.80
5th pressure hPa : -
Rack travel in m: 9.30...9.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 2000
Speed rpm : 950
Del.quantity cm³/ : 279.0...282.0
1000 s: (276.0...285.0)

Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 2000
Speed rpm : 800
Del.quantity cm³/ : 286.0...290.0
1000 s: (283.0...293.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 136.0...138.0
1000 s: (133.0...141.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 15.30
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 260.0...280.0
1000 s: (256.0...284.0)

Remarks:

:
* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 z
 Edition : 30.04.92
 Replaces : 11.91
 Test oil : ISO-4113

Combination no. : 0 402 648 923

Injection pump
 Pump designation : PE8P120A320LS7840-1
 EP type number : 0 412 628 862
 Governor
 Governor design. : RQV350...1050PA866
 -16
 Governor no. : 0 421 813 961

Customer spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 250.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)

Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.20...13.40

Del.quantity cm³/ : 20.8...21.0

100 s: (20.5...21.3)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.8...6.4

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.30...1.80

2nd speed rpm : 454
 travel mm : 2.80...3.30

3rd speed rpm : 900
 travel mm : 5.40...5.90

4th speed rpm : 1107
 travel mm : 7.80...8.30

5th speed rpm : 1204
 travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1120

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 800
Del. quantity : 208.0...210.0
1000 : (205.0...213.0)
Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:
1st rack travel in: 11.80
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 66...74

Testing:
Speed rpm : 250
Minimum rack travel: 7.60
Speed rpm : 350
Rack travel in mm : 5.80...6.40

CONSTANT REGULATION

Speed rpm : 350...500

TORQUE CONTROL

Dimension a mm : 1.30
2nd speed rpm : 1050
Rack travel in m: 12.80...13.00
3rd speed rpm : 800
Rack travel in m: 14.10...14.30

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 13.20...13.40

Measurement
Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 10.90...11.10
2nd pressure hPa : 550

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Rack travel in m: 12.20...12.40
3rd pressure hPa : 1050
Rack travel in m: 13.30...13.40 *
4th pressure hPa : 1150
Rack travel in m: 13.60...13.90
5th pressure hPa : -
Rack travel in m: 10.30...10.60

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1400
Speed rpm : 1050
Del. quantity cm³/ : 194.0...197.0
1000 s: (191.0...200.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1400
Speed rpm : 800
Del. quantity cm³/ : 236.0...240.0
1000 s: (233.0...243.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 123.0...125.0
1000 s: (120.0...128.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.80
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 195.0...215.0
1000 s: (191.0...219.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 u 4
 Edition : 30.04.92
 Replaces : 01.92
 Test oil : ISO-4113

Combination no. : 0 402 648 926

Injection pump
 Pump designation : PE8P120A320LS7840
 EP type number : 0 412 528 850
 Governor
 Governor design. : RQ300/1050PA972-9
 Governor no. : 0 421 801 632

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 250.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.70...12.90

Del.quantity cm³/ : 19.1...19.3
 100 s: (18.8...19.6)

Spread cm³ : 0.6
 100 s: (0.9)

2nd speed rpm : 600.0
 Rack travel in mm : 4.2...4.8
 Del.quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)

Spread cm³ : 0.6
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 600
 Aneroid pressure h: 700
 Del.quantity : 191.0...193.0
 1000 : (188.0...196.0)

Spread cm³ : 6.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.50
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:

Speed rpm : 200
Minimum rack trave: 7.90
Speed rpm : 300
Rack travel in mm : 6.20...6.80
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 12.50...12.70

Measurement

Speed 1/min : 600

1st pressure hPa : 250
Rack travel in m: 10.90...11.10
2nd pressure hPa : 440
Rack travel in m: 11.90...12.10
3rd pressure hPa : 920
Rack travel in m: 12.70...12.90
4th pressure hPa : -
Rack travel in m: 10.70...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1300
Speed rpm : 1050
Del.quantity cm3/ : 210.0...213.0
1000 s: (207.0...216.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1300
Speed rpm : 800
Del.quantity cm3/ : 212.0...216.0
1000 s: (209.0...219.0)

Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.50
Speed rpm : 1090...1105

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 22.01.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 927
 Injection pump
 Pump designation : PE8P120A320LS7840
 EP type number : 0 412 628 850
 Governor
 Governor design. : RQV350...1050PA797
 -36
 Governor no. : 0 421 813 984

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 250.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

J05

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.50...12.70

Del. quantity cm³/ : 18.8...19.0

100 s: (18.5...19.3)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 6.0...6.6

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

2nd speed rpm : 510

3rd speed rpm : 1050

4th speed rpm : 1109

5th speed rpm : 1270

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1030

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 700

Del.quantity : 188.0...190.0
1000 : (185.0...193.0)
Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:

1st rack travel in: 12.50
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 82...90

Testing:

Speed rpm : 200
Minimum rack travel: 7.90
Speed rpm : 350
Rack travel in mm : 6.20...6.80
Rack travel in mm : 2.00
Speed rpm : 380...420

CONSTANT REGULATION

Speed rpm : 350...500

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 12.50...12.70

Measurement

Speed 1/min : 600

1st pressure hPa : 250
Rack travel in m: 10.90...11.10
2nd pressure hPa : 440
Rack travel in m: 11.90...12.10
3rd pressure hPa : 900
Rack travel in m: 12.70...12.90
4th pressure hPa : -
Rack travel in m: 10.70...11.00

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1300
Speed rpm : 1030
Del.quantity cm³/ : 210.0...213.0
1000 s: (207.0...216.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1300
Speed rpm : 800
Del.quantity cm³/ : 212.0...216.0
1000 s: (209.0...219.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 130.0...132.0
1000 s: (127.0...135.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.50
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 180.0...200.0
1000 s: (176.0...204.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 26.06.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 648 928
Injection pump
Pump designation : PE8P120A320LS7847
EP type number : 0 412 628 863
Governor
Governor design. : RQ300/1050PA1030
Governor no. : 0 421 801 640

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kw : 280.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 700
Rack travel in mm : 13.40...13.60
Del.quantity cm3/ : 23.3...23.5
100 s: (23.0...23.8)
Spread cm3 : 0.6
100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.2...5.8
Del.quantity cm3/ : 1.0...1.6
100 s: (0.7...1.9)
Spread cm3 : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -2
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 1200
Del.quantity : 233.0...235.0
1000 : (230.0...238.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version
Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.80
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.5

Testing:

Speed rpm : 200
Minimum rack travel: 7.60
Speed rpm : 300
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 360...400

TORQUE CONTROL

Dimension a mm : 0.50
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.80...13.00
2nd speed rpm : 800
Rack travel in m: 13.40...13.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 700
Pressure hPa : 1200
Rack travel mm : 13.40...13.60

Measurement

Speed 1/min : 700

1st pressure hPa : -
Rack travel in m: 10.50...10.70
2nd pressure hPa : 350
Rack travel in m: 11.10...11.30
3rd pressure hPa : 750
Rack travel in m: 12.90...13.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm³/ : 206.0...209.0
1000 s: (203.0...212.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.80
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 45.0...65.0
1000 s: (41.0...69.0)
Rack travel in mm : 10.50...10.70

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 930
 Injection pump
 Pump designation : PE3PI20A3Z0LS7847
 EP type number : 0 412 628 863
 Governor
 Governor design. : RQ300/1050PA1031-2
 Governor no. : 0 421 801 645

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 13.30...13.50
 Del. quantity cm³/ : 23.3...23.5
 100 s: (23.0...23.8)
 Spread cm³ : 0.6
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.2...5.8
 Del. quantity cm³/ : 1.0...1.6
 100 s: (0.7...1.9)
 Spread cm³ : 0.6
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 1200
 Del. quantity : 233.0...235.0
 1000 : (230.0...238.0)
 Spread cm³ : 6.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.80
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.5

Testing:

Speed rpm : 200
Minimum rack travel: 7.60
Speed rpm : 300
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 370...410

TORQUE CONTROL

Dimension a mm : 0.50

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.40...13.50

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.50...10.70
2nd pressure hPa : 350
Rack travel in m: 11.10...11.30
3rd pressure hPa : 750
Rack travel in m: 12.80...13.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm3/ : 206.0...209.0
1000 s: (203.0...212.0)
Spread cm3 : 8.00
1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 250.0...290.0
1000 s: (246.0...294.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 931
 Injection pump
 Pump designation : PE8P120A320LS7847
 EP type number : 0 412 628 863
 Governor
 Governor design. : RQ300/950PA1032-1
 Governor no. : 0 421 801 646

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.50...13.60

Del.quantity cm³/ : 23.3...23.5

100 s: (23.0...23.8)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.2...5.8

Del.quantity cm³/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 233.0...235.0

1000 : (230.0...238.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.00
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.5

Testing:

Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 360...400

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.50...13.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.50...10.70
2nd pressure hPa : 350
Rack travel in m: 11.10...11.30
3rd pressure hPa : 750
Rack travel in m: 12.80...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 950
Del.quantity cm³/ : 214.0...218.0
1000 s: (211.0...221.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 1.00
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 45.0...65.0
1000 s: (41.0...69.0)
Rack travel in mm : 10.50...10.70

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE
 Edition : 03.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 932
 Injection pump
 Pump designation : PE8P120A320LS7849
 EP type number : 0 412 628 864
 Governor
 Governor design. : RGV300...1050PA1034
 Governor no. : 0 421 813 993

Customer-spec. information
 Customer : LIEBHERR

Engine : D 9308 TI

1st version kW : 360.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
 : (4.45...4.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 8- 7- 2- 6- 3-
 5- 4

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1050
 Rack travel in mm : 15.00...15.10
 Del. quantity cm³/ : 26.2...26.4
 100 s: (25.9...26.7)
 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 350.0
 Rack travel in mm : 5.1...5.5
 Del. quantity cm³/ : 1.8...2.4
 100 s: (1.5...2.7)
 Spread cm³ : 0.6
 100 s: (1.0)

(3) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.70...2.10
 2nd speed rpm : 405
 travel mm : 2.40...2.90
 3rd speed rpm : 550
 travel mm : 4.20...4.60
 4th speed rpm : 780
 travel mm : 6.30...6.90
 5th speed rpm : 1118
 travel mm : 10.40...10.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1185
 Rack travel in mm : 12.70...15.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1050
 Aneroid pressure h: 1500

Del.quantity : 262.0...264.0
1000 : (259.0...267.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 103...111

Testing:

1st rack travel in: 14.00
Speed rpm : 1100...1110
2nd rack travel in: 4.00
Speed rpm : 1200...1230
4th rack travel in: 1300
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 68...76

Testing:

Speed rpm : 250
Minimum rack travel: 8.50
Speed rpm : 350
Rack travel in mm : 5.20...5.40
Rack travel in mm : 2.00
Speed rpm : 430...490

CONSTANT REGULATION

Speed rpm : 350...420

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 550
Pressure hPa : 1500
Rack travel mm : 15.00...15.10

Measurement

Speed 1/min : 550

1st pressure hPa : -
Rack travel in m: 12.70...12.90
2nd pressure hPa : 1010
Rack travel in m: 14.60...14.70
3rd pressure hPa : 830
Rack travel in m: 13.20...13.40

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 550
Del.quantity cm³/ : 218.0...220.0
1000 s: (215.0...223.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 14.00
Speed rpm : 1100...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 155.0...175.0
1000 s: (151.0...179.0)
Rack travel in mm : 20.00...21.00

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 932A
 Injection pump
 Pump designation : PE8P120A320LS7849
 EP type number : 0 412 628 864
 Governor
 Governor design. : RQV300...1050PA1034
 Governor no. : 0 421 813 993

Customer-spec. information
 Customer : LIEBHERR

Engine : D 9308 TI

1st version kW : 360.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
 : (4.45...4.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 8- 7- 2- 6- 3-
 5- 4

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1050
 Rack travel in mm : 14.40...14.60
 Del. quantity cm³/ : 26.2...26.4
 100 s: (25.9...26.7)
 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 350.0
 Rack travel in mm : 5.7...5.9
 Del. quantity cm³/ : 1.8...2.4
 100 s: (1.5...2.7)
 Spread cm³ : 0.6
 100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.70...2.10
 2nd speed rpm : 405
 travel mm : 2.40...2.90
 3rd speed rpm : 550
 travel mm : 4.20...4.60
 4th speed rpm : 780
 travel mm : 6.30...6.90
 5th speed rpm : 1118
 travel mm : 10.40...10.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1140
 Rack travel in mm : 12.20...14.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1050
 Aneroid pressure h: 1500

Del.quantity : 262.0...264.0
1000 : (259.0...267.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 103...111

Testing:
1st rack travel in: 13.50
Speed rpm : 1100...1110
2nd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1300
Speed rpm : 0.00...1.40

LOW IDLE 1
Control lever
position degrees: 68...76

Testing:
Speed rpm : 250
Minimum rack trave: 10.80
Speed rpm : 350
Rack travel in mm : 5.70...5.90
Rack travel in mm : 2.00
Speed rpm : 430...490

CONSTANT REGULATION
Speed rpm : 350...420

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 550
Pressure hPa : 1500
Rack travel mm : 14.40...14.60

Measurement
Speed 1/min : 550

1st pressure hPa : -
Rack travel in m: 11.20...11.40
2nd pressure hPa : 1130
Rack travel in m: 13.60...13.80
3rd pressure hPa : 870
Rack travel in m: 12.00...12.20

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 550

Del.quantity cm3/ : 193.5...195.5
1000 s: (190.5...198.5)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.50
Speed rpm : 1100...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...170.0
1000 s: (146.0...174.0)
Rack travel in mm : 20.00...21.00

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 934
 Injection pump
 Pump designation : PE8P120A32OLS7823
 EP type number : 0 412 628 835
 Governor
 Governor design. : RQV350...1050PA866
 -21
 Governor no. : 0 421 813 996

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 353.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8-7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.60...13.80

Del.quantity cm³/ : 23.4...23.7

100 s: (23.1...24.0)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.0...5.6

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.40...1.60

2nd speed rpm : 800

travel mm : 4.70...5.10

3rd speed rpm : 1100

travel mm : 7.60...8.20

4th speed rpm : 1175

travel mm : 9.20...9.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h : 900
Del. quantity : 234.0...237.0
1000 : (231.0...240.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 115...123

Testing:
1st rack travel in: 13.40
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 62...70

Testing:
Speed rpm : 250
Minimum rack trave: 7.10
Speed rpm : 350
Rack travel in mm : 5.00...5.60

CONSTANT REGULATION
Speed rpm : 350...550

TORQUE CONTROL
Dimension a mm : 0.50
2nd speed rpm : 1050
Rack travel in m: 14.40...14.60
3rd speed rpm : 800
Rack travel in m: 15.20...15.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 13.60...13.80

Measurement
Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 11.10...11.30
2nd pressure hPa : 500
Rack travel in m: 12.80...13.00
3rd pressure hPa : 1050

Rack travel in m: 13.70...13.90 *
4th pressure hPa : 1250
Rack travel in m: 14.50...14.70
5th pressure hPa : -
Rack travel in m: 10.10...10.40

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1600
Speed rpm : 1050
Del. quantity cm³/ : 252.0...256.0
1000 s: (249.0...259.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 800
Del. quantity cm³/ : 270.0...274.0
1000 s: (267.0...277.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 1050
Del. quantity cm³/ : 184.0...187.0 *
1000 s: (181.0...190.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 149.0...151.0
1000 s: (146.0...154.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.40
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 939
 Injection pump
 Pump designation : PE8P120A320LS7851
 EP type number : 0 412 628 865
 Governor
 Governor design. : RQV300...1050PA797
 -37
 Governor no. : 0 421 814 003

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 405.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.70...4.80
 : (4.65...4.85)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 14.40...14.60

Del. quantity cm³/ : 28.1...28.3

100 s: (27.8...28.6)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.50...1.00

2nd speed rpm : 575
 travel mm : 4.30...4.80

3rd speed rpm : 830
 travel mm : 5.90...6.40

4th speed rpm : 1108
 travel mm : 8.10...8.60

5th speed rpm : 1190
 travel mm : 9.70...10.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 12.10...14.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050
Aneroid pressure h: 1300
Del.quantity : 281.0...283.0
1000 : (278.0...286.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 116...124

Testing:

1st rack travel in: 13.40
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 78...86

Testing:

Speed rpm : 200
Minimum rack trave: 7.20
Speed rpm : 300
Rack travel in ma : 5.80...6.00

CONSTANT REGULATION

Speed rpm : 380...420

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1300
Rack travel mm : 14.40...14.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 7.90...8.10
2nd pressure hPa : 500
Rack travel in m: 9.20...9.40
3rd pressure hPa : 1000
Rack travel in m: 13.40...13.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1300
Speed rpm : 600
Del.quantity cm3/ : 293.0...296.0
1000 s: (290.0...299.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 131.0...133.0
1000 s: (128.0...136.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.40
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 80.0...100.0
1000 s: (76.0...104.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 18,2 j
 Edition : 31.07.92
 Replaces : 07.90
 Test oil : ISO-4113
 Combination no. : 0 402 649 811
 Injection pump
 Pump designation : PE10P120A520LS7831
 EP type number : 0 412 629 806
 Governor
 Governor design. : RQ300/950PA950
 Governor no. : 0 421 801 520

Customer-spec. information
 Customer : MAN

Engine : D 2840 LF

1st version kW : 368.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 13.00...14.00
 Firing order : 10- 9- 4- 1- 8- 7-
 : 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-
 : 216-261-288-333
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 13.50...13.60

Del.quantity cm³/ : 22.9...23.1
 100 s: (22.6...23.4)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.0...5.4
 Del.quantity cm³/ : 1.7...2.3
 100 s: (1.4...2.6)
 Spread cm³ : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 950
 Aneroid pressure h: 1000
 Del.quantity : 229.0...231.0
 1000 : (226.0...234.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600
 Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.50
Speed rpm : 995...1010
2nd rack travel in: 4.00
Speed rpm : 1040...1070
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:
Speed rpm : 100
Minimum rack travel: 6.70
Speed rpm : 300
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 370...410

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 950
Rack travel in m: 13.70...13.80
2nd speed rpm : 600
Rack travel in m: 13.70...13.90

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.50...13.60

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.70...10.90
2nd pressure hPa : 200
Rack travel in m: 11.10...11.20
3rd pressure hPa : 500
Rack travel in m: 12.80...13.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 600
Del.quantity cm3/ : 225.0...231.0
1000 s: (222.0...234.0)
Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/ : 151.0...153.0
1000 s: (148.0...156.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.50
Speed rpm : 995...1010

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 170.0...190.0
1000 s: (166.0...194.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.00...5.40
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 3-7014

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 10
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 649 811B
 Injection pump
 Pump designation : PE10P120A52DLS7831
 EP type number : 0 412 629 806
 Governor
 Governor design. : RQ300/950PA950
 Governor no. : 0 421 801 520

Cust. part no. : 3-7092

Customer-spec. information
 Customer : MAN

Engine : D 2840 LF

1st version kW : 368.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 13.00...14.00
 Firing order : 1- 9- 4- 1- 8- 7
 - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-
 216-261-288-333
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm : 950
 Rack travel in mm : 13.60...13.70
 Del.quantity cm³/ : 23.2...23.4
 100 s : (22.9...23.7)
 Spread cm³ : 0.5
 100 s : (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 4.8...5.2
 Del.quantity cm³/ : 1.2...1.8
 100 s : (0.9...2.1)
 Spread cm³ : 0.8
 100 s : (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 950
 Aneroid pressure h: 1000
 Del.quantity : 232.0...234.0
 1000 : (229.0...237.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600
 Rack travel in mm : 20.0

Testing:
1st rack travel in: 12.50
Speed rpm : 995...1010
2nd rack travel in: 4.00
Speed rpm : 1040...1070
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.0

Testing:

Speed rpm : 100
Minimum rack travel: 6.70
Speed rpm : 300
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 370...410

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 950
Rack travel in m: 13.70...13.80
2nd speed rpm : 600
Rack travel in m: 13.70...13.90

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.60...13.70

Measurement

Speed 1/min : 500
1st pressure hPa : -
Rack travel in m: 10.80...11.00
2nd pressure hPa : 200
Rack travel in m: 11.20...11.30
3rd pressure hPa : 500
Rack travel in m: 12.90...13.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 600

Del.quantity cm³/ : 228.0...234.0
1000 s : (225.0...237.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 151.0...153.0
1000 s : (148.0...156.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.50
Speed rpm : 995...1010

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 170.0...190.0
1000 s : (166.0...194.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.80...5.20
Del.quantity cm³/ : 12.0...18.0
1000 s : (9.0...21.0)
Spread cm³ : 8.00
1000 s : (12.00)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 10
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 18,2 k
 Edition : 31.07.92
 Replaces : 06.90
 Test oil : ISO-4113

Combination no. : 0 402 649 812

Injection pump
 Pump designation : PE10P120A520LS7831
 EP type number : 0 412 629 806
 Governor
 Governor design. : RQV300...950PA949
 Governor no. : 0 421 813 855

Customer-spec. information
 Customer : MAN

Engine : D 2840 LF

1st version kw : 368.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 13.00...14.00
 Firing order : 10- 9- 4- 1- 8- 7
 - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-
 216-261-288-333
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 13.50...13.60

Del. quantity cm³/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.0...5.4

Del. quantity cm³/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 995

travel mm : 10.10...10.30

2nd speed rpm : 300

travel mm : 1.20...1.40

3rd speed rpm : 800

travel mm : 6.40...6.80

4th speed rpm : 1200

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1000

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950

Aneroid pressure h: 1000

Del.quantity : 229.0...231.0
1000 : (226.0...234.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:

1st rack travel in: 12.50
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1045...1075
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 74...82

Testing:

Speed rpm : 100
Minimum rack travel: 6.70
Speed rpm : 300
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

Speed rpm : 310...430

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.50...13.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.70...10.90
2nd pressure hPa : 200
Rack travel in m: 11.10...11.20
3rd pressure hPa : 500
Rack travel in m: 12.80...13.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

J27

Aneroid pressure h: 1000
Speed rpm : 600
Del.quantity cm³/ : 225.0...231.0
1000 s: (222.0...234.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 151.0...153.0
1000 s: (148.0...156.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.50
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 170.0...190.0
1000 s: (166.0...194.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.00...5.40
Del.quantity cm³/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 3-7015
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 10
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 649 812B
 Injection pump
 Pump designation : PE10P120A520LS7831
 EP type number : 0 412 629 806
 Governor
 Governor design. : RQV300...950PA949
 Governor no. : 0 421 813 855

Cust. part no. : 3-7093

Customer-spec. information
 Customer : MAN

Engine : D 2840 LF

1st version kW : 368.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 13.00...14.00
 Firing order : 10- 9- 4- 1- 8- ?
 - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-
 216-261-288-333
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm : 950
 Rack travel in mm : 13.60...13.70
 Del. quantity cm³/ : 23.2...23.4
 100 s: (22.9...23.7)
 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 4.8...5.2
 Del. quantity cm³/ : 1.2...1.8
 100 s: (0.9...2.1)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 995
 travel mm : 10.10...10.30
 2nd speed rpm : 300
 travel mm : 1.20...1.40
 3rd speed rpm : 800
 travel mm : 6.40...6.80
 4th speed rpm : 1200
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1000
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 950

Aneroid pressure h: 1000
Del.quantity : 232.0...234.0
1000 : (229.0...237.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:
1st rack travel in: 12.50
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1030...1060
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 58...66

Testing:
Speed rpm : 100
Minimum rack trave: 6.70
Speed rpm : 300
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION
Speed rpm : 310...430

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.60...13.70

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.80...11.00
2nd pressure hPa : 200
Rack travel in m: 11.20...11.30
3rd pressure hPa : 500
Rack travel in m: 12.80...13.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

K01

Aneroid pressure h: 1000
Speed rpm : 600
Del.quantity cm3/ : 225.0...231.0
1000 s: (222.0...234.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 151.0...153.0
1000 s: (148.0...156.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.50
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 170.0...190.0
1000 s: (166.0...194.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.80...5.20
Del.quantity cm3/ : 12.0...18.0
1000 s: (9.0...21.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

:
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 10
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
 Edition : 31.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 649 814
 Injection pump
 Pump designation : PE10P120A520LS7831
 EP type number : 0 412 629 806
 Governor
 Governor design. : RQ300/950PA950-1
 Governor no. : 0 421 801 651

Customer-spec. information
 Customer : MAN

Engine : D 2840 LF 06

1st version kW : 368.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 13.00...14.00
 Firing order : 10- 9- 4- 1- 8- 7
 - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-
 216-261-288-333
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 13.30...13.40

Del.quantity cm³/ : 22.3...22.5

100 s: (22.0...22.8)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.3

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950

Aneroid pressure h: 1000

Del.quantity : 223.0...225.0

1000 : (220.0...228.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.30
Speed rpm : 995...1010
2nd rack travel in: 4.00
Speed rpm : 1040...1070
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 249...257

Testing:
Speed rpm : 200
Minimum rack trave: 6.60
Speed rpm : 300
Rack travel in mm : 5.00...5.20
Rack travel in mm : 2.00
Speed rpm : 370...410

TORQUE CONTROL
Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 950
Rack travel in m: 13.30...13.40
2nd speed rpm : 600
Rack travel in m: 13.30...13.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.30...13.40

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.10...10.30
2nd pressure hPa : 430
Rack travel in m: 10.50...10.60
3rd pressure hPa : 700
Rack travel in m: 12.00...12.40

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 600
Del.quantity cm³/ : 219.0...225.0
1000 s: (216.0...228.0)
Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm³/ : 146.0...148.0
1000 s: (143.0...151.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.30
Speed rpm : 995...1010

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 170.0...190.0
1000 s: (166.0...194.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.90...5.30
Del.quantity cm³/ : 14.0...20.0
1000 s: (11.0...23.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 3-7222

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 10
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
 Edition : 31.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 649 815
 Injection pump
 Pump designation : PE10P120A520LS7831
 EP type number : 0 412 629 806
 Governor
 Governor design. : RQV300...950PA949-1
 Governor no. : 0 421 813 998

Customer-spec. information
 Customer : MAN

Engine : D 2840 LF 06

1st version kw : 368.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 13.00...14.00
 Firing order : 10- 9- 4- 1- 8- 7
 : - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-
 216-261-288-333
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm : 950
 Rack travel in mm : 13.30...13.40
 Del.quantity cm3/ : 22.3...22.5
 100 s: (22.0...22.8)
 Spread cm3 : 0.5
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 4.9...5.3
 Del.quantity cm3/ : 1.4...2.0
 100 s: (1.1...2.3)
 Spread cm3 : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 995
 travel mm : 10.10...10.30
 2nd speed rpm : 300
 travel mm : 1.20...1.40
 3rd speed rpm : 800
 travel mm : 6.40...6.80
 4th speed rpm : 1200
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1060
 Rack travel in mm : 11.00...13.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 950
 Aneroid pressure h: 1000

Del.quantity : 223.0...225.0
1000 : (220.0...228.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:

1st rack travel in: 12.30
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1045...1075
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 75...83

Testing:

Speed rpm : 200
Minimum rack travel: 6.60
Speed rpm : 300
Rack travel in mm : 5.00...5.20

CONSTANT REGULATION

Speed rpm : 280...400

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.30...13.40

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.10...10.30
2nd pressure hPa : 430
Rack travel in m: 10.50...10.60
3rd pressure hPa : 700
Rack travel in m: 12.00...12.30

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

K05

Aneroid pressure h: 1000
Speed rpm : 600
Del.quantity cm³/ : 219.0...225.0
1000 s: (216.0...228.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 146.0...148.0
1000 s: (143.0...151.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.30
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 170.0...190.0
1000 s: (166.0...194.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.90...5.30
Del.quantity cm³/ : 14.0...20.0
1000 s: (11.0...23.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 3-7223
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 10
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
 Edition : 03.07.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 649 816

Injection pump
 Pump designation : PE10P120A520LS7853
 EP type number : 0 412 629 810
 Governor
 Governor design. : RQV300...1150PA1039-
 2K

Governer no. : 0 421 815 316

Customer-spec. information
 Customer : MAN

Engine : D 2840 LXE

1st version kW : 603.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

K06

Prestroke mm : 4.50...4.60
 : (4.45...4.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 10- 9- 4- 1- 8- 7
 - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-
 Phasing : 216-261-288-333
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm : 1150

 Rack travel in mm : 13.50...13.60

 Del.quantity cm³/ : 29.9...30.1
 100 s: (29.6...30.4)

 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 500
 Rack travel in mm : 8.8...9.0
 Del.quantity cm³/ : 14.9...15.1
 100 s: (14.6...15.4)
 Spread cm³ : 0.8
 100 s: (1.2)
 3rd speed rpm : 300
 Rack travel in mm : 7.30...7.50
 Del.quantity cm³/ : 5.2...6.0 **
 100 s: (-)
 Spread cm³ : -
 100 s: (-)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 2.00...2.20
 2nd speed rpm : 450
 travel mm : 4.00...4.40
 3rd speed rpm : 800
 travel mm : 6.70...7.10
 4th speed rpm : 1200
 travel mm : 10.30...10.50
 5th speed rpm : 1400
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1280
Rack travel in mm : 11.20...13.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
Aneroid pressure h: 1300
Del.quantity : 299.0...301.0
1000 : (296.0...304.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 115...123

Testing:

1st rack travel in: 12.50
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1285...1315
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 70...78

Testing:

Speed rpm : 200
Minimum rack travel: 6.70
Speed rpm : 300
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

Speed rpm : 270...390

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 900
Pressure hPa : 1300
Rack travel mm : 13.50...13.60

Measurement

Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 8.80...9.00
2nd pressure hPa : 200
Rack travel in m: 9.30...9.40
3rd pressure hPa : 800
Rack travel in m: 12.10...12.50

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 149.0...151.0
1000 s: (146.0...154.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.50
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...120.0**
1000 s: (-)

Speed rpm : 100
Del.quantity cm³/ : 0 *
1000 s: (-)
Rack travel in mm : 17.5...21.0

HIGH IDLE

1st version

Speed rpm : 500
Rack travel in mm : 0.00...7.00
Del.quantity cm³/ : 0 *
1000 s: (-)

2nd version

Speed rpm : 500
Rack travel in mm : 0.00...7.50
Del.quantity cm³/ : 0...50.0
1000 s: (-)

3rd version

Speed rpm : 500
Rack travel in mm : 8.50...8.70
Del.quantity cm³/ : 125.0...
1000 s: (-)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.30...7.50

Del.quantity cm³/ : 52.0...60.0 **
1000 s: (-)

Remarks:

: MAN-NR. 3-7225

* applies to cylinders 1, 2, 3, 7 and 9

** applies for cylinders 4, 5, 6, 8 and 10

APPLICATION

Ship



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 670 800
 Injection pump
 Pump designation : PE12P120A320LS7850
 EP type number : 0 412 620 833
 Governor
 Governor design. : RSV350...750POA825
 Governor no. : 0 421 833 221

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kw : 389.0
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 150...170

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 9.00...12.00
 Firing order : 12- 1- 5- 9- 8- 3-
 : 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 : 180-225-240-285-300-
 Phasing : 345
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.10...13.20

Del.quantity cm³/ : 21.0...21.2
 100 s: (20.7...21.5)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 350.0
 Rack travel in mm : 5.4...5.6
 Del.quantity cm³/ : 1.4...2.0
 100 s: (1.1...2.3)
 Spread cm³ : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Del.quantity : 210.0...212.0
 1000 : (207.0...215.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Control lever
 position degrees: 21...29

Testing:
 1st rack travel in: 12.10
 Speed rpm : 750...755

2nd rack travel in: 4.00
Speed rpm : 775...788
4th rack travel in: 900
Speed rpm : 0.30...1.00

LOW IDLE 1
Control lever
position degrees: 9...17
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.5

Testing:
Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 350
Rack travel in mm : 5.40...5.60

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 650
Del.quantity cm3/ : 209.0...213.0
1000 s: (206.0...216.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.10
Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...230.0
1000 s: (206.0...234.0)

Remarks:

:

Observe VDT-I-420/120

APPLICATION

Rail car

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 22,0 d
 Edition : 07.08.92
 Replaces : 06.04.90
 Test oil : ISO-4113

Combination no. : 0 402 670 807

Injection pump
 Pump designation : PE12P120A320LS7814-1
 EP type number : 0 412 620 819
 Governor
 Governor design. : RSV375...1050POA535
 -3
 Governor no. : 0 421 833 328

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 588.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 150...170

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90
 : (4.75...4.95)

Rack travel in mm : 19.00...21.00
 Firing order : 12- 1- 5- 9- 8- 3-
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 13.90...14.10

Del.quantity cm³/ : 26.2...26.5

100 s: (25.9...26.8)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 375.0
 Rack travel in mm : 5.1...5.4
 Del.quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)

Spread cm³ : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 650
 Aneroid pressure h: 1100
 Del.quantity : 262.0...265.0
 1000 : (259.0...268.0)

Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 96...104

Testing:
1st rack travel in: 12.90
Speed rpm : 1070...1080
2nd rack travel in: 4.00
Speed rpm : 1150...1168
4th rack travel in: 14.00
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 375
Rack travel in mm : 5.2

Testing:
Speed rpm : 100
Minimum rack travel: 8.00
Speed rpm : 375
Rack travel in mm : 5.10...5.40

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1030
Rack travel in m: 13.70...13.90
2nd speed rpm : 950
Rack travel in m: 14.20...14.40
3rd speed rpm : 850
Rack travel in m: 14.40...14.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1050
Rack travel mm : 13.90...14.10

Measurement
Speed 1/min : 600

1st pressure hPa : 400
Rack travel in m: 9.30...9.50
2nd pressure hPa : 650
Rack travel in m: 12.10...12.30
3rd pressure hPa : 1370
Rack travel in m: 14.10...14.30
4th pressure hPa : -
Rack travel in m: 8.20...8.60

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1800
Speed rpm : 1030
Del.quantity cm3/ : 261.0...264.0
1000 s: (258.0...267.0)
Spread cm3 : 8.00
1000 s: (12.)
Aneroid pressure h: 1800
Speed rpm : 750
Del.quantity cm3/ : 279.0...282.0
1000 s: (276.0...285.0)
Spread cm3 : 8.00
1000 s: (12.00)
Speed rpm : 500
Del.quantity cm3/ : 130.0...132.0
1000 s: (127.0...135.0)
Spread cm3 : 8.00
1000 s: (12.00)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.90
Speed rpm : 1070...1080

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 260.0...280.0
1000 s: (256.0...284.0)

Remarks:

:
On activation of the starting solenoid,
the start position must be reached.

Observe VDT-I-420/120

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 22,0 d
 Edition : 06.04.90
 Replaces : 13.12.89
 Test oil : ISO-4113

Combination no. : 0 402 670 807

Injection pump
 Pump designation : PE12P120A320LS7814-1
 EP type number : 0 412 620 819
 Governor
 Governor design. : RSV375..1050POA535-3
 Governor no. : 0 421 833 328

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kw : 588.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 150...170

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90
 : (4.75...4.95)
 Rack travel in mm : 19.00...21.00
 Firing order : 12- 1- 5- 9- 8- 3-
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 13.90...14.10

Del.quantity cm³/ : 26.2...26.5

100 s: (25.9...26.8)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 375.0
 Rack travel in mm : 5.1...5.4
 Del.quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)

Spread cm³ : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3

Speed rpm : 800
 Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 650
 Aneroid pressure h: 1100
 Del.quantity : 262.0...265.0
 1000 : (259.0...268.0)

Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Control lever
 position degrees: 96...104

Testing:
1st rack travel in: 12.90
Speed rpm : 1070...1080
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 14.00
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 375
Rack travel in mm : 5.2

Testing:

Speed rpm : 100
Minimum rack travel: 8.00
Speed rpm : 375
Rack travel in mm : 5.10...5.40

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1030
Rack travel in m: 13.70...13.90
2nd speed rpm : 950
Rack travel in m: 14.20...14.40
3rd speed rpm : 850
Rack travel in m: 14.40...14.60

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1050
Rack travel mm : 13.90...14.10

Measurement

Speed 1/min : 600

1st pressure hPa : 400
Rack travel in m: 9.30...9.50
2nd pressure hPa : 650
Rack travel in m: 12.10...12.30
3rd pressure hPa : 1370
Rack travel in m: 14.10...14.30
4th pressure hPa : -
Rack travel in m: 8.20...8.60

FUEL DELIVERY CHARACTERISTICS

1st version

K14

Aneroid pressure h: 1800
Speed rpm : 1030
Del.quantity cm3/ : 261.0...264.0
1000 s: (258.0...267.0)
Spread cm3 : 8.00
1000 s: (12.)
Aneroid pressure h: 1800
Speed rpm : 750
Del.quantity cm3/ : 279.0...282.0
1000 s: (276.0...285.0)
Spread cm3 : 8.00
1000 s: (12.00)
Speed rpm : 500
Del.quantity cm3/ : 130.0...132.0
1000 s: (127.0...135.0)
Spread cm3 : 8.00
1000 s: (12.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.90
Speed rpm : 1070...1080

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 260.0...280.0
1000 s: (256.0...284.0)

Remarks:

:

On activation of the starting solenoid,
the start position must be reached.

Observe VDT-I-420/120

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 676 812
 Injection pump
 Pump designation : PE6P120A320LS7808-3
 EP type number : 0 412 626 870
 Governor
 Governor design. : RSV425...1050POA535-6
 Govenner no. : 0 421 833 378
 Customer-spec. information
 Customer : MERCEDES-BENZ
 Engine : OM 441 LA
 1st version kW : 249.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

K15

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600
 Rack travel in mm : 14.20...14.40
 Del.quantity cm3/ : 22.0...22.2
 100 s: (21.7...22.5)
 Spread cm3 : 0.6
 100 s: (0.9)

2nd speed rpm : 425.0
 Rack travel in mm : 4.7...5.3
 Del.quantity cm3/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm3 : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 600
 Aneroid pressure h: 900
 Del.quantity : 220.0...222.0
 1000 : (217.0...225.0)
 Spread cm3 : 6.00
 1000 : (9.00)

RATED SPEED

1st version
 Control lever
 position degrees: 92...100

Testing:

1st rack travel in: 14.00
Speed rpm : 1070...1080
2nd rack travel in: 4.00
Speed rpm : 1135...1153
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 69...77
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 5.00

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 425
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 430...490

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

2nd speed rpm : 1030
Rack travel in m: 14.90...15.10
3rd speed rpm : 800
Rack travel in m: 15.30...15.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 14.20...14.40

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 10.30...10.50
2nd pressure hPa : 600
Rack travel in m: 13.50...13.70
3rd pressure hPa : 1250
Rack travel in m: 14.40...14.60
4th pressure hPa : 1350
Rack travel in m: 14.80...15.00
5th pressure hPa : -
Rack travel in m: 9.50...9.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
Speed rpm : 1030
Del.quantity cm3/ : 242.0...246.0
1000 s: (239.0...249.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1500
Speed rpm : 800
Del.quantity cm3/ : 248.0...252.0
1000 s: (245.0...255.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 145.0...147.0
1000 s: (142.0...150.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 14.00
Speed rpm : 1070...1080

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

Observe VDT-I-420/120

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
 Edition : 31.07.92
 Replaces : 02.92
 Test oil : ISO-4113

Combination no. : 0 402 735 804

Injection pump
 Pump designation : PES5P120A720/3LS7250
 EP type number : 0 412 725 809
 Governor
 Governor design. : RQV325...1000PA962-5
 K
 Governor no. : 0 421 815 300

Customer-spec. information
 Customer : MAN

Engine : D2865LF03/LU03

1st version kw : 235.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

K17

Prestroke mm : 4.80...4.90
 : (4.75...4.95)
 Rack travel in mm : 15.00...16.00
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.40...4.60
 & maximum rack tra: 15.0...16.0
 Difference ° CS : 1.75...3.25

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.50...12.60

Del.quantity cm³/ : 26.2...26.4

100 s: (25.9...26.7)

Spread cm³ : 0.6

100 s: (-)

2nd speed rpm : 350.0

Rack travel in mm : 4.8...5.2

Del.quantity cm³/ : 4.7...5.3

100 s: (4.4...5.6)

Spread cm³ : 1.0

100 s: (1.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1050

travel mm : 8.80...9.00

2nd speed rpm : 325

travel mm : 2.40...2.60

3rd speed rpm : 520

travel mm : 4.30...4.70

4th speed rpm : 800

travel mm : 5.90...6.30

5th speed rpm : 1350

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1140

Rack travel in mm : 9.30...13.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900
Aneroid pressure h: 1200
Del.quantity : 262.0...264.0
1000 : (259.0...267.0)
Spread cm³ : 6.00

RATED SPEED

1st version

Control lever
position degrees: 284...292

Testing:

1st rack travel in: 11.30
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1125...1155
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 239...247

Testing:

Speed rpm : 250
Minimum rack trave: 6.50
Speed rpm : 350
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 340...450

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 12.50...12.60
2nd speed rpm : 1000
Rack travel in m: 12.20...12.40
3rd speed rpm : 650
Rack travel in m: 11.90...12.10

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 12.50...12.60

Measurement

Speed 1/min : 900

1st pressure hPa : -

Rack travel in m: 8.40...8.60

2nd pressure hPa : 170

Rack travel in m: 8.80...8.90

3rd pressure hPa : 600

Rack travel in m: 11.40...11.70

START CUT-OUT

Speed 1/min : 290 (310)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1000
Del.quantity cm³/ : 245.0...251.0
1000 s: (242.0...254.0)
Aneroid pressure h: 1200
Speed rpm : 650
Del.quantity cm³/ : 264.0...270.0
1000 s: (261.0...273.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 159.0...161.0
1000 s: (156.0...164.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30

Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 180.0...200.0
1000 s: (176.0...204.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 4.80...5.20
Del.quantity cm³/ : 47.0...53.0
1000 s: (44.0...56.0)
Spread cm³ : 10.00
1000 s: (14.00)

Remarks:

: MAN-NR. 3-7200

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 5
start of delivery



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
 Edition : 31.07.92
 Replaces : 02.92
 Test oil : ISO-4113
 Combination no. : 0 402 735 805
 Injection pump
 Pump designation : PES5P120A720/3LS7250
 EP type number : 0 412 725 809
 Governor
 Governor design. : RQV325...1000PA962-6
 K
 Governor no. : 0 421 815 301

Customer-spec. information
 Customer : MAN

Engine : D2865LFO6/LU06
 1st version kW : 235.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve
 : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 089
 Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

K20

Prestroke mm : 4.80...4.90
 : (4.75...4.95)
 Rack travel in mm : 15.00...16.00
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 5

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.40...4.60
 & maximum rack tra: 15.0...16.0
 Difference ° CS : 1.75...3.25

BASIC SETTING

1st speed rpm : 900
 Rack travel in mm : 12.40...12.50
 Del. quantity cm³/ : 26.0...26.2
 100 s: (25.7...26.5)
 Spread cm³ : 0.5
 100 s: (0.9)
 2nd speed rpm : 350.0
 Rack travel in mm : 4.8...5.2
 Del. quantity cm³/ : 4.7...5.3
 100 s: (4.4...5.6)
 Spread cm³ : 1.0
 100 s: (1.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1050
 travel mm : 8.70...8.90
 2nd speed rpm : 325
 travel mm : 2.40...2.60
 3rd speed rpm : 520
 travel mm : 4.20...4.80
 4th speed rpm : 810
 travel mm : 6.00...6.40
 5th speed rpm : 1350
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1140

Rack travel in mm : 9.20...13.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900
Aneroid pressure h: 1200
Del.quantity : 260.0...262.0
1000 : (257.0...265.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 284...292

Testing:

1st rack travel in: 11.20
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1125...1155
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 239...247

Testing:

Speed rpm : 250
Minimum rack trave: 6.50
Speed rpm : 350
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 340...450

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 12.40...12.50
2nd speed rpm : 1000
Rack travel in m: 12.10...12.30
3rd speed rpm : 650
Rack travel in m: 12.00...12.20
4th speed rpm : 400
Rack travel in m: 11.10...11.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 12.40...12.50

Measurement

Speed 1/min : 900

1st pressure hPa : -

Rack travel in m: 8.30...8.50
2nd pressure hPa : 170
Rack travel in m: 8.70...8.80
3rd pressure hPa : 600
Rack travel in m: 11.30...11.60

START CUT-OUT

Speed 1/min : 290 (310)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1000
Del.quantity cm³/ : 243.0...249.0
1000 s: (240.0...252.0)
Aneroid pressure h: 1200
Speed rpm : 650
Del.quantity cm³/ : 270.0...276.0
1000 s: (267.0...279.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 159.0...161.0
1000 s: (156.0...164.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 180.0...200.0
1000 s: (176.0...204.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 4.80...5.20
Del.quantity cm³/ : 47.0...53.0
1000 s: (44.0...56.0)
Spread cm³ : 10.00
1000 s: (14.00)

Remarks:

: MAN-NR. 3-7202

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 5
start of delivery



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 10,0 f
 Edition : 31.07.92
 Replaces : 01.92
 Test oil : ISO-4113

Combination no. : 0 402 735 806

Injection pump
 Pump designation : PES5P120A720/3LS7250
 EP type number : 0 412 725 809
 Governor
 Governor design. : RQV325...1000PA960-8
 K
 Governor no. : 0 421 815 308

Customer-spec. information
 Customer : MAN

Engine : D2865LF03

1st version kW : 235.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90
 : (4.75...4.95)
 Rack travel in mm : 15.00...16.00
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.40...4.60
 & maximum rack tra: 15.0...16.0
 Difference ° CS : 1.75...3.25

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.30...12.40

Del.quantity cm³/ : 26.2...26.4

100 s: (25.9...26.7)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.8...5.2

Del.quantity cm³/ : 4.7...5.3

100 s: (4.4...5.6)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1055
 travel mm : 10.40...10.60

2nd speed rpm : 325
 travel mm : 2.40...2.60

3rd speed rpm : 500
 travel mm : 3.40...4.00

4th speed rpm : 750
 travel mm : 6.80...7.20

5th speed rpm : 1350
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 9.10...13.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900
Aneroid pressure h: 1200
Del.quantity : 262.0...264.0
1000 : (259.0...267.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 293...301

Testing:

1st rack travel in: 11.10
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1125...1155
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 248...256

Testing:

Speed rpm : 225
Minimum rack trave: 6.50
Speed rpm : 325
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 340...450

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 12.30...12.40
2nd speed rpm : 1000
Rack travel in m: 12.00...12.20
3rd speed rpm : 650
Rack travel in m: 11.70...11.90

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 12.30...12.40

Measurement

K24

Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 8.20...8.40
2nd pressure hPa : 170
Rack travel in m: 8.60...8.70
3rd pressure hPa : 600
Rack travel in m: 11.30...11.60

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1000
Del.quantity cm³/ : 245.0...251.0
1000 s: (242.0...254.0)
Aneroid pressure h: 1200
Speed rpm : 650
Del.quantity cm³/ : 264.0...270.0
1000 s: (261.0...273.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 159.0...161.0
1000 s: (156.0...164.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.10
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 180.0...200.0
1000 s: (176.0...204.0)

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.80...5.20
Del.quantity cm³/ : 47.0...53.0
1000 s: (44.0...56.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 3-7201

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 5

start of delivery:



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
 Edition : 31.07.92
 Replaces : 03.92
 Test oil : ISO-4113
 Combination no. : 0 402 735 807
 Injection pump
 Pump designation : PES5P120A720/3LS7250
 EP type number : 0 412 725 809
 Governor
 Governor design. : RQV325...1000PA960-9
 K
 Governor no. : 0 421 815 309

Customer-spec. information
 Customer : MAN

Engine : D2865LF06/LU06

1st version kW : 235.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90
 : (4.75...4.95)
 Rack travel in mm : 15.00...16.00
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.20...12.30

Del.quantity cm³/ : 26.0...26.2

100 s: (25.7...26.5)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.8...5.2

Del.quantity cm³/ : 4.7...5.3

100 s: (4.4...5.6)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1050
 travel mm : 10.40...10.60

2nd speed rpm : 300
 travel mm : 2.00...2.20

3rd speed rpm : 450
 travel mm : 3.50...4.10

4th speed rpm : 750
 travel mm : 6.80...7.20

5th speed rpm : 1350
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1115

Rack travel in mm : 9.10...13.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1200
Del. quantity : 260.0...262.0
1000 : (257.0...265.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 293...301

Testing:
1st rack travel in: 11.10
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1125...1155
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 248...256

Testing:
Speed rpm : 225
Minimum rack travel: 6.50
Speed rpm : 325
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION
Speed rpm : 270...340

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 12.20...12.30
2nd speed rpm : 1000
Rack travel in m: 12.00...12.20
3rd speed rpm : 650
Rack travel in m: 11.80...12.00
4th speed rpm : 400
Rack travel in m: 11.10...11.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 12.20...12.30

Measurement
Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 8.10...8.30

K27

2nd pressure hPa : 170
Rack travel in m: 8.50...8.60
3rd pressure hPa : 600
Rack travel in m: 11.00...11.30

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 1000
Del. quantity cm³/ : 245.0...251.0
1000 s: (242.0...254.0)
Aneroid pressure h: 1200
Speed rpm : 650
Del. quantity cm³/ : 272.0...278.0
1000 s: (269.0...281.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 159.0...161.0
1000 s: (156.0...164.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.10
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 180.0...200.0
1000 s: (176.0...204.0)

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.80...5.20
Del. quantity cm³/ : 47.0...53.0
1000 s: (44.0...56.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks: : MAN-NR. 3-7203

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 5
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 5,9 w
 Edition : 21.05.92
 Replaces : 11.91
 Test oil : ISO-4113
 Combination no. : 0 402 736 806
 Injection pump
 Pump designation : PES6P110A120RS7213
 EP type number : 0 412 716 804
 Governor
 Governor design. : RQV400...1250PA964K
 Governor no. : 0 421 815 252

Customer-spec. information
 Customer : C.D.C.

Engine : 6BTA-A

1st version kw : 171.5
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 115...125

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45
 : (4.30...4.50)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 15.80...15.90

Del. quantity cm³/ : 16.8...17.0

100 s: (16.5...17.3)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 400.0

Rack travel in mm : 5.7...5.9

Del. quantity cm³/ : 3.2...3.8

100 s: (3.0...4.0)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 400

travel mm : 1.60...1.80

2nd speed rpm : 600

travel mm : 2.80...3.30

3rd speed rpm : 1300

travel mm : 7.20...7.40

4th speed rpm : 1500

travel mm : 8.90...9.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 1500

Del. quantity : 168.5...170.5

1000 : (165.5...173.5)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 59...67

Testing:
1st rack travel in: 14.80
Speed rpm : 1290...1300
2nd rack travel in: 4.00
Speed rpm : 1475...1505
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 13...21

Testing:
Speed rpm : 275
Minimum rack travel: 7.20
Speed rpm : 400
Rack travel in mm : 5.70...5.90

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 15.80...15.90
2nd speed rpm : 825
Rack travel in m: 14.70...14.90
3rd speed rpm : 700
Rack travel in m: 14.00...14.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1250
Pressure hPa : 1500
Rack travel mm : 15.80...15.90

Measurement
Speed 1/min : 1250

1st pressure hPa : -
Rack travel in m: 8.10...8.50
2nd pressure hPa : 375
Rack travel in m: 10.00...10.10
3rd pressure hPa : 935
Rack travel in m: 13.70...14.10

START CUT-OUT

Speed 1/min : 300 (310)

LO1

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 825
Del.quantity cm³/ : 178.0...184.0
1000 s: (175.0...187.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 87.0...91.0
1000 s: (85.0...93.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 14.80
Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...175.0
1000 s: (130.0...180.0)
Rack travel in mm : 12.40...13.40

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.70...5.90
Del.quantity cm³/ : 32.0...38.0
1000 s: (30.0...40.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:
: C.D.C. # 3921769
: C.D.C. # 3913440

Start-of-delivery mark 6° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 r
 Edition : 21.05.92
 Replaces : 12.91
 Test oil : ISO-4113

Combination no. : 0 402 736 807

Injection pump
 Pump designation : PES6P11UA12ORS7214
 EP type number : 0 412 716 805
 Governor
 Governor design. : RQV350...1100PA964-1
 K
 Governor no. : 0 421 815 253

Customer-spec. information
 Customer : C.D.C.

Engine : 6CTA-A

1st version kw : 201.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 115...125

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45
 : (4.30...4.50)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 15.70...15.80

Del. quantity cm³/ : 20.6...20.8

100 s: (20.3...21.1)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.7...5.9

Del. quantity cm³/ : 2.7...3.3

100 s: (2.5...3.5)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.80...2.00

2nd speed rpm : 450
 travel mm : 3.10...3.50

3rd speed rpm : 600
 travel mm : 5.10...5.50

4th speed rpm : 1000
 travel mm : 8.10...8.30

5th speed rpm : 1200
 travel mm : 9.60...10.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1050
 Aneroid pressure h: 1500
 Del. quantity : 206.0...208.0
 1000 : (203.0...211.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 64...72

Testing:

1st rack travel in: 14.40
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1300...1330
4th rack travel in: 14.00
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 11...19

Testing:

Speed rpm : 275
Minimum rack travel: 7.20
Speed rpm : 350
Rack travel in mm : 5.70...5.90

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 15.70...15.80
2nd speed rpm : 650
Rack travel in m: 13.20...13.60
3rd speed rpm : 1100
Rack travel in m: 15.40...15.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1050
Pressure hPa : 1500
Rack travel mm : 15.70...15.80

Measurement

Speed 1/min : 1050

1st pressure hPa : -
Rack travel in m: 8.10...8.50
2nd pressure hPa : 335
Rack travel in m: 10.10...10.20
3rd pressure hPa : 845
Rack travel in m: 13.60...14.00

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
Speed rpm : 650
Del.quantity cm³/ : 187.5...193.5
1000 s: (184.5...196.5)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 91.0...95.0
1000 s: (89.0...97.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.40
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...175.0
1000 s: (130.0...180.0)
Rack travel in mm : 11.00...12.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.70...5.90
Del.quantity cm³/ : 27.0...33.0
1000 s: (25.0...35.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: C.D.C. # 3921771
: C.D.C. # 3916627

Start-of-delivery mark = 5.5° after
start of delivery cyl. 1.

Bow dimension:

Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 5,9 w 1
 Edition : 21.05.92
 Replaces : 11.91
 Test oil : ISO-4113
 Combination no. : 0 402 736 810
 Injection pump
 Pump designation : PES6P110A120RS7213
 EP type number : 0 412 716 804
 Governor
 Governor design. : RQV400...1250PA964-2
 K
 Governor no. : 0 421 815 254

Customer-spec. information
 Customer : C.D.C.

Engine : 6BTA-A

1st version kW : 141.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve
 : 1 417 413 047
 Inlet press., bar : 1.50
 Overflow
 quantity min. 1/h: 115...125
 Test nozzle holder
 assembly : 1 688 901 101
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,6
 Test lines : 1 680 750 008
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24
 Prestroke mm : 4.35...4.45
 : (4.30...4.50)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4
 Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250
 Rack travel in mm : 14.80...14.90
 Del. quantity cm³/ : 15.9...16.1
 100 s: (15.6...16.4)
 Spread cm³ : 0.5
 100 s: (0.9)
 2nd speed rpm : 400.0
 Rack travel in mm : 5.4...5.6
 Del. quantity cm³/ : 3.2...3.8
 100 s: (3.0...4.0)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 400
 travel mm : 1.60...1.80
 2nd speed rpm : 600
 travel mm : 2.80...3.30
 3rd speed rpm : 1300
 travel mm : 7.20...7.40
 4th speed rpm : 1500
 travel mm : 8.90...9.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1250
 Aneroid pressure h: 1200
 Del. quantity : 159.0...161.0
 1000 : (156.0...164.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 59...67

Testing:
1st rack travel in: 13.80
Speed rpm : 1295...1305
2nd rack travel in: 4.00
Speed rpm : 1460...1490
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 11...19

Testing:
Speed rpm : 275
Minimum rack travel: 7.20
Speed rpm : 400
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 14.80...14.90
2nd speed rpm : 800
Rack travel in m: 13.10...13.30

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1250
Pressure hPa : 1200
Rack travel mm : 14.80...14.90

Measurement

Speed 1/min : 1250

1st pressure hPa : -
Rack travel in m: 8.30...8.70
2nd pressure hPa : 365
Rack travel in m: 10.20...10.30
3rd pressure hPa : 690
Rack travel in m: 13.20...13.60

START CUT-OUT

Speed 1/min : 290 (300)

L05

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 800
Del.quantity cm3/ : 158.0...164.0
1000 s: (155.0...167.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 95.5...99.5
1000 s: (93.5...101.5)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.80
Speed rpm : 1295...1305

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...175.0
1000 s: (130.0...180.0)
Rack travel in mm : 12.00...13.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.40...5.60
Del.quantity cm3/ : 32.0...38.0
1000 s: (30.0...40.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: C.D.C. # 3921777
: C.D.C. # 3919090

Start-of-delivery mark 6° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 5,9 w 2
 Edition : 21.05.92
 Replaces : 03.92
 Test oil : ISO-4113

Combination no. : 0 402 736 811

Injection pump
 Pump designation : PES6P110A120RS7213
 EP type number : 0 412 716 804
 Governor
 Governor design. : RQV400...1250PA964-3
 K
 Governor no. : 0 421 815 255

Customer-spec. information
 Customer : C.D.C.

Engine : 6BTA-A

1st version kW : 147.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 115...125

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.60x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45
 : (4.30...4.50)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 14.80...14.90

Del. quantity cm³/ : 15.8...16.0

100 s: (15.5...16.3)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 400.0

Rack travel in mm : 5.5...5.7

Del. quantity cm³/ : 3.2...3.8

100 s: (3.0...4.0)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 400

travel mm : 1.60...1.80

2nd speed rpm : 600

travel mm : 2.80...3.30

3rd speed rpm : 1300

travel mm : 7.20...7.40

4th speed rpm : 1500

travel mm : 8.90...9.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h : 1200

Del. quantity : 158.5...160.5

1000 : (155.5...163.5)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 56...64

Testing:
1st rack travel in: 13.80
Speed rpm : 1290...1300
2nd rack travel in: 4.00
Speed rpm : 1460...1490
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 12...20

Testing:
Speed rpm : 275
Minimum rack trave: 7.20
Speed rpm : 400
Rack travel in mm : 5.50...5.70

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 14.80...14.90
2nd speed rpm : 800
Rack travel in m: 13.20...13.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1250
Pressure hPa : 1200
Rack travel mm : 14.80...14.90

Measurement
Speed 1/min : 1250

1st pressure hPa : -
Rack travel in m: 8.20...8.60
2nd pressure hPa : 365
Rack travel in m: 10.60...10.70
3rd pressure hPa : 690
Rack travel in m: 13.70...14.10

START CUT-OUT

Speed 1/min : 290 (300)

L07

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 800
Del.quantity cm3/ : 156.5...162.5
1000 s: (153.5...165.5)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 90.0...94.0
1000 s: (88.0...96.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.80
Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...175.0
1000 s: (130.0...180.0)
Rack travel in mm : 11.90...12.90

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.50...5.70
Del.quantity cm3/ : 32.0...38.0
1000 s: (30.0...40.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:
: C.D.C. # 3921776
: C.D.C. # 3918321

Start-of-delivery mark 6° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 r 6
 Edition : 21.05.92
 Replaces : 02.92
 Test oil : ISO-4113

Combination no. : 0 402 736 812

Injection pump
 Pump designation : PES6P110A120RS7214
 EP type number : 0 412 716 805
 Governor
 Governor design. : RQV350...1200PA964-4
 K
 Governor no. : 0 421 815 256

Customer-spec. information
 Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 156.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 115...125

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45
 : (4.30...4.50)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 12.30...12.40

Del. quantity cm³/ : 14.7...14.9

100 s: (14.4...15.2)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.4...5.6

Del. quantity cm³/ : 2.7...3.3

100 s: (2.5...3.5)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.80...2.00

2nd speed rpm : 450

travel mm : 3.10...3.50

3rd speed rpm : 700

travel mm : 5.90...6.30

4th speed rpm : 1200

travel mm : 9.00...9.20

5th speed rpm : 1400

travel mm : 10.70...11.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 1200

Del. quantity : 147.5...149.5

1000 : (144.5...152.5)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 60...68

Testing:
1st rack travel in: 11.30
Speed rpm : 1245...1255
2nd rack travel in: 4.00
Speed rpm : 1375...1405
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 11...19

Testing:
Speed rpm : 275
Minimum rack travel: 7.20
Speed rpm : 350
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 12.30...12.40
2nd speed rpm : 650
Rack travel in m: 10.90...11.30
3rd speed rpm : 550
Rack travel in m: 10.80...11.20

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1200
Pressure hPa : 1200
Rack travel mm : 12.30...12.40

Measurement
Speed 1/min : 1200

1st pressure hPa : -
Rack travel in m: 7.50...7.90
2nd pressure hPa : 225
Rack travel in m: 8.90...9.00
3rd pressure hPa : 575
Rack travel in m: 11.20...11.60

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 650
Del. quantity cm³/ : 151.0...157.0
1000 s: (148.0...160.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 86.5...90.5
1000 s: (84.5...92.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.30
Speed rpm : 1245...1255

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 135.0...175.0
1000 s: (130.0...180.0)
Rack travel in mm : 10.70...11.70

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.40...5.60
Del. quantity cm³/ : 27.0...33.0
1000 s: (25.0...35.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:
: C.D.C. # 3921774
: C.D.C. # 3917088

Start-of-delivery mark = 5.5° after
start of delivery cyl. 1.

Bow dimension:
Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 r 4
 Edition : 21.05.92
 Replaces : 12.91
 Test oil : ISO-4113

Combination no. : 0 402 736 813

Injection pump
 Pump designation : PES6P110A120RS7214
 EP type number : 0 412 716 805
 Governor
 Governor design. : RQV350...1100PA964-5
 K
 Governor no. : 0 421 815 257

Customer-spec. information
 Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 187.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 115...125

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45
 : (4.30...4.50)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 14.50...14.60

Del. quantity cm3/ : 18.6...18.8
 100 s: (18.3...19.1)

Spread cm3 : 0.5
 100 s: (0.9)

2nd speed rpm : 350.0
 Rack travel in mm : 5.7...5.9
 Del. quantity cm3/ : 2.7...3.3
 100 s: (2.5...3.5)

Spread cm3 : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.80...2.00

2nd speed rpm : 450
 travel mm : 3.10...3.50

3rd speed rpm : 600
 travel mm : 5.10...5.50

4th speed rpm : 1000
 travel mm : 8.10...8.30

5th speed rpm : 1200
 travel mm : 9.60...10.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Aneroid pressure h: 1500
 Del. quantity : 186.5...188.5
 1000 : (183.5...191.5)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 62...70

Testing:
1st rack travel in: 13.50
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1290...1320
4th rack travel in: 14.00
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 11...19

Testing:
Speed rpm : 275
Minimum rack travel: 7.20
Speed rpm : 350
Rack travel in mm : 5.70...5.90

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 14.50...14.60
2nd speed rpm : 650
Rack travel in m: 13.50...13.70
3rd speed rpm : 500
Rack travel in m: 12.90...13.30

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1100
Pressure hPa : 1500
Rack travel mm : 14.50...14.60

Measurement
Speed 1/min : 1100

1st pressure hPa : -
Rack travel in m: 8.10...8.50
2nd pressure hPa : 335
Rack travel in m: 10.10...10.20
3rd pressure hPa : 845
Rack travel in m: 13.60...14.00

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 650
Del.quantity cm³/ : 198.0...204.0
1000 s: (195.0...207.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 91.0...95.0
1000 s: (89.0...97.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.50
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...175.0
1000 s: (130.0...180.0)
Rack travel in mm : 10.80...11.80

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.70...5.90
Del.quantity cm³/ : 27.0...33.0
1000 s: (25.0...35.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:
: C.D.C. # 3921772
: C.D.C. # 3916628

Start-of-delivery mark = 5.5° after
start of delivery cyl. 1.

Bow dimension:
Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 r 1
 Edition : 21.05.92
 Replaces : 02.92
 Test oil : ISO-4113
 Combination no. : 0 402 736 814
 Injection pump
 Pump designation : PES6P110A12ORS7214
 EP type number : 0 412 716 805
 Governor
 Governor design. : RQV350...1200PA964-6
 K
 Governor no. : 0 421 815 258
 Customer-spec. information
 Customer : C.D.C.
 Engine : 6CTA-A
 1st version kw : 187.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 047
 Inlet press., bar : 1.50
 Overflow
 quantity min. 1/h: 115...125
 Test nozzle holder
 assembly : 1 688 901 101
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,6
 Test lines : 1 680 750 008
 Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24
 Prestroke mm : 4.35...4.45
 : (4.30...4.50)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4
 Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200
 Rack travel in mm : 14.50...14.60
 Del.quantity cm³/ : 18.3...18.5
 100 s: (18.0...18.8)
 Spread cm³ : 0.5
 100 s: (0.9)
 2nd speed rpm : 350.0
 Rack travel in mm : 5.4...5.6
 Del.quantity cm³/ : 2.7...3.3
 100 s: (2.5...3.5)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.80...2.00
 2nd speed rpm : 450
 travel mm : 3.10...3.50
 3rd speed rpm : 700
 travel mm : 5.90...6.30
 4th speed rpm : 1200
 travel mm : 9.00...9.20
 5th speed rpm : 1400
 travel mm : 10.70...11.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1200
 Aneroid pressure h: 1200
 Del.quantity : 183.0...185.0
 1000 : (180.0...188.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 62...70

Testing:
1st rack travel in: 13.50
Speed rpm : 1245...1255
2nd rack travel in: 4.00
Speed rpm : 1405...1435
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 11...19

Testing:
Speed rpm : 275
Minimum rack travel: 7.20
Speed rpm : 350
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 14.50...14.60
2nd speed rpm : 650
Rack travel in m: 11.40...11.80

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 1200
Pressure hPa : 1200
Rack travel mm : 14.50...14.60

Measurement

Speed 1/min : 1200

1st pressure hPa : -
Rack travel in m: 7.50...7.90
2nd pressure hPa : 320
Rack travel in m: 9.60...9.70
3rd pressure hPa : 860
Rack travel in m: 13.10...13.50

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 650
Del.quantity cm³/ : 165.5...171.5
1000 s: (162.5...174.5)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 86.5...90.5
1000 s: (84.5...92.5)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.50
Speed rpm : 1245...1255

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...175.0
1000 s: (130.0...180.0)
Rack travel in mm : 10.70...11.70

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.40...5.60
Del.quantity cm³/ : 27.0...33.0
1000 s: (25.0...35.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: C.D.C. # 3921775
: C.D.C. # 3917089

Start-of-delivery mark = 5.5° after
start of delivery cyl. 1.

Bow dimension:

Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 r 5
 Edition : 21.05.92
 Replaces : 12.91
 Test oil : ISO-4113
 Combination no. : 0 402 736 815
 Injection pump
 Pump designation : PES6P110A120RS7214
 EP type number : 0 412 716 805
 Governor
 Governor design. : RQV350...1000PA964-7
 K
 Governor no. : 0 421 815 259

Customer-spec. information
 Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 194.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 115...125

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45
 : (4.30...4.50)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 15.80...15.90

Del.quantity cm³/ : 21.7...21.9

100 s: (21.4...22.2)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.6...5.8

Del.quantity cm³/ : 2.7...3.3

100 s: (2.5...3.5)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.60...1.80

2nd speed rpm : 450
 travel mm : 3.00...3.40

3rd speed rpm : 600
 travel mm : 5.20...5.60

4th speed rpm : 1000
 travel mm : 8.40...8.60

5th speed rpm : 1150
 travel mm : 9.80...10.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 900
 Aneroid pressure h: 1500
 Del.quantity : 217.0...219.0
 1000 : (214.0...222.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 62...70

Testing:

1st rack travel in: 14.30
Speed rpm : 1050...1060
2nd rack travel in: 4.00
Speed rpm : 1205...1235
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 11...19
Rack travel in mm : 5.7

Testing:

Speed rpm : 275
Minimum rack travel: 7.20
Speed rpm : 350
Rack travel in mm : 5.60...5.80

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 15.80...15.90
2nd speed rpm : 650
Rack travel in m: 14.00...14.40
3rd speed rpm : 1000
Rack travel in m: 15.30...15.50

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 900
Pressure hPa : 1500
Rack travel mm : 15.80...15.90

Measurement

Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 8.10...8.50
2nd pressure hPa : 335
Rack travel in m: 10.10...10.20
3rd pressure hPa : 845
Rack travel in m: 13.60...14.00

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
Speed rpm : 650
Del.quantity cm³/ : 211.0...217.0
1000 s: (208.0...220.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 91.0...95.0
1000 s: (89.0...97.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 14.30
Speed rpm : 1050...1060

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...175.0
1000 s: (130.0...180.0)
Rack travel in mm : 10.90...11.90

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.60...5.80
Del.quantity cm³/ : 27.0...33.0
1000 s: (25.0...35.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: C.D.C. # 3921773
: C.D.C. # 3916629

Start-of-delivery mark = 5.5° after
start of delivery cyl. 1.

Bow dimension:

Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 r 2
 Edition : 21.05.92
 Replaces : 11.91
 Test oil : ISO-4113
 Combination no. : 0 402 736 816
 Injection pump
 Pump designation : PES6P110A120RS7214
 EP type number : 0 412 716 805
 Governor
 Governor design. : RQV350...1200PA964-8
 K
 Governor no. : 0 421 815 264

Customer-spec. information
 Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 213.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 115...125

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24
 Prestroke mm : 4.35...4.45
 : (4.30...4.50)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4
 Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100
 Rack travel in mm : 14.70...14.80
 Del.quantity cm³/ : 19.0...19.2
 100 s: (18.7...19.5)
 Spread cm³ : 0.5
 100 s: (0.9)
 2nd speed rpm : 350.0
 Rack travel in mm : 5.6...5.8
 Del.quantity cm³/ : 2.7...3.3
 100 s: (2.5...3.5)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.80...2.00
 2nd speed rpm : 450
 travel mm : 3.10...3.50
 3rd speed rpm : 700
 travel mm : 5.90...6.30
 4th speed rpm : 1200
 travel mm : 9.00...9.20
 5th speed rpm : 1400
 travel mm : 10.70...11.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Aneroid pressure h: 1200
 Del.quantity : 190.0...192.0
 1000 : (187.0...195.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 62...70

Testing:

1st rack travel in: 13.20
Speed rpm : 1245...1255
2nd rack travel in: 4.00
Speed rpm : 1400...1430
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 11...19

Testing:

Speed rpm : 275
Minimum rack travel: 7.20
Speed rpm : 350
Rack travel in mm : 5.60...5.80

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 14.70...14.80
2nd speed rpm : 650
Rack travel in m: 12.60...13.00
3rd speed rpm : 1200
Rack travel in m: 14.20...14.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1100
Pressure hPa : 1200
Rack travel mm : 14.70...14.80

Measurement

Speed 1/min : 1100
1st pressure hPa : -
Rack travel in m: 7.80...8.20
2nd pressure hPa : 335
Rack travel in m: 9.60...9.70
3rd pressure hPa : 785
Rack travel in m: 12.80...13.20

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 650
Del.quantity cm³/ : 181.0...187.0
1000 s: (178.0...190.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 90.0...94.0
1000 s: (88.0...96.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.20
Speed rpm : 1245...1255

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...175.0
1000 s: (130.0...180.0)
Rack travel in mm : 10.70...11.70

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.60...5.80
Del.quantity cm³/ : 27.0...33.0
1000 s: (25.0...35.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: C.D.C. # 3921770
: C.D.C. # 3916626

Start-of-delivery mark 6° cam angle
after start of delivery cyl. 1

Bow dimension:

Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
 Edition : 31.07.92
 Replaces : 02.92
 Test oil : ISO-4113
 Combination no. : 0 402 736 824
 Injection pump
 Pump designation : PES6P120A720/3LS7251
 EP type number : 0 412 726 860
 Governor
 Governor design. : RQV300...1000PA962-7
 K
 Governor no. : 0 421 815 302

Customer-spec. information
 Customer : MAN

Engine : D2866LF06

1st version kW : 309.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90
 : (4.75...4.95)
 Rack travel in mm : 15.00...16.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 6

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.40...4.60
 & maximum rack tra: 15.0...16.0
 Difference ° CS : 1.75...3.25

BASIC SETTING

1st speed rpm : 900
 Rack travel in mm : 13.50...13.60
 Del.quantity cm³/ : 28.5...28.7
 100 s: (28.2...29.0)
 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.0...5.4
 Del.quantity cm³/ : 2.9...3.5
 100 s: (2.6...3.8)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1050
 travel mm : 9.10...9.30
 2nd speed rpm : 300
 travel mm : 3.70...3.90
 3rd speed rpm : 450
 travel mm : 4.20...4.60
 4th speed rpm : 770
 travel mm : 5.80...6.20
 5th speed rpm : 1350
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1140

Rack travel in mm : 10.10...14.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900
Aneroid pressure h : 1200
Del.quantity : 285.0...287.0
1000 : (282.0...290.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 288...296

Testing:

1st rack travel in: 12.10
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1125...1155
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 243...251

Testing:

Speed rpm : 200
Minimum rack travel: 6.70
Speed rpm : 300
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

Speed rpm : 240...360

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 13.50...13.60
2nd speed rpm : 1000
Rack travel in m: 13.00...13.20
3rd speed rpm : 750
Rack travel in m: 12.70...12.90
4th speed rpm : 400
Rack travel in m: 11.50...11.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 13.50...13.60

Measurement

Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 8.90...9.10
2nd pressure hPa : 220
Rack travel in m: 9.40...9.50
3rd pressure hPa : 720
Rack travel in m: 11.80...12.20

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1000
Del.quantity cm³/ : 257.0...263.0
1000 s: (254.0...266.0)
Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm³/ : 270.0...276.0
1000 s: (267.0...279.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 166.0...168.0
1000 s: (163.0...171.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.10
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 210.0...230.0
1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.00...5.40
Del.quantity cm³/ : 29.0...35.0
1000 s: (26.0...38.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7204

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
 Edition : 31.07.92
 Replaces : 02.92
 Test oil : ISO-4113

Combination no. : 0 402 736 825

Injection pump
 Pump designation : PES6P120A720/3LS7251
 EP type number : 0 412 726 860
 Governor
 Governor design. : RQV300...1000PA962-8
 K
 Governor no. : 0 421 815 303

Customer-spec. information
 Customer : MAN

Engine : D2866LF09

1st version kw : 309.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

L20

Prestroke mm : 4.80...4.90
 : (4.75...4.95)
 Rack travel in mm : 15.00...16.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.40...4.60
 & maximum rack tra: 15.0...16.0
 Difference ° CS : 1.75...3.25

BASIC SETTING

1st speed rpm : 900
 Rack travel in mm : 13.90...14.00

Del.quantity cm3/ : 29.9...30.1
 100 s: (29.6...30.4)

Spread cm3 : 0.5
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.0...5.4
 Del.quantity cm3/ : 2.9...3.5
 100 s: (2.6...3.8)
 Spread cm3 : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1050
 travel mm : 9.10...9.30
 2nd speed rpm : 300
 travel mm : 3.60...4.00
 3rd speed rpm : 450
 travel mm : 4.10...4.70
 4th speed rpm : 770
 travel mm : 5.80...6.20
 5th speed rpm : 1350
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1130

Rack travel in mm : 10.40...14.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900
Aneroid pressure h: 1200
Del.quantity : 299.0...301.0
1000 : (296.0...304.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 287...295

Testing:

1st rack travel in: 12.40
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1125...1155
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 243...251

Testing:

Speed rpm : 200
Minimum rack travel: 7.30
Speed rpm : 300
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

Speed rpm : 240...360

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 13.90...14.00
2nd speed rpm : 1000
Rack travel in m: 13.40...13.60
3rd speed rpm : 750
Rack travel in m: 13.30...13.50
4th speed rpm : 400
Rack travel in m: 11.90...12.20

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 13.90...14.00

Measurement

Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 9.00...9.20
2nd pressure hPa : 220
Rack travel in m: 9.40...9.50
3rd pressure hPa : 720
Rack travel in m: 11.80...12.20

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1000
Del.quantity cm3/ : 271.0...277.0
1000 s: (268.0...280.0)
Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm3/ : 288.0...294.0
1000 s: (285.0...297.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 168.0...170.0
1000 s: (165.0...173.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.40
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...220.0
1000 s: (196.0...224.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.00...5.40
Del.quantity cm3/ : 29.0...35.0
1000 s: (26.0...38.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 3-7206

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 6
start of delivery



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
 Edition : 31.07.92
 Replaces : 02.92
 Test oil : ISO-4113

Combination no. : 0 402 736 826

Injection pump
 Pump designation : PES6P120A720/3LS7251
 EP type number : 0 412 726 860
 Governor
 Governor design. : RQV300...1000PA962-9
 K
 Govenner no. : 0 421 815 304

Customer-spec. information
 Customer : MAN

Engine : D2866LU04

1st version kW : 309.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90
 : (4.75...4.95)
 Rack travel in mm : 15.00...16.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 29.1...29.3

100 s: (28.8...29.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.4...4.8

Del.quantity cm3/ : 2.9...3.5

100 s: (2.6...3.8)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1050

travel mm : 9.10...9.30

2nd speed rpm : 300

travel mm : 3.70...3.90

3rd speed rpm : 450

travel mm : 4.20...4.60

4th speed rpm : 770

travel mm : 5.80...6.20

5th speed rpm : 1350

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1140

Rack travel in mm : 10.00...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1200
Del.quantity : 291.0...293.0
1000 : (288.0...296.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 287...295

Testing:

1st rack travel in: 12.00
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1125...1155
4th rack travel in: 1250

LOW IDLE 1

Control lever
position degrees: 243...251

Testing:

Speed rpm : 200
Minimum rack travel: 6.10
Speed rpm : 300
Rack travel in mm : 4.50...4.70

CONSTANT REGULATION

Speed rpm : 240...360

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 750
Rack travel in m: 12.70...12.80
2nd speed rpm : 900
Rack travel in m: 13.00...13.20
3rd speed rpm : 1000
Rack travel in m: 12.90...13.10

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 13.00...13.20

Measurement

Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 8.30...8.50
2nd pressure hPa : 200
Rack travel in m: 8.70...8.80
3rd pressure hPa : 660

L24

Rack travel in m: 11.30...11.50

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1000
Del.quantity cm³/ : 275.0...282.0
1000 s: (272.0...285.0)

Aneroid pressure h: 1200
Speed rpm : 900
Del.quantity cm³/ : 291.0...297.0
1000 s: (288.0...300.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 169.0...171.0
1000 s: (166.0...174.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 200.0...220.0
1000 s: (196.0...224.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.40...4.80
Del.quantity cm³/ : 29.0...35.0
1000 s: (26.0...38.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 3-7208

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 6
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 z
 Edition : 31.07.92
 Replaces : 01.92
 Test oil : ISO-4113

Combination no. : 0 402 736 827

Injection pump
 Pump designation : PES6P120A720/3LS7251
 EP type number : 0 412 726 860
 Governor
 Governor design. : RQV300...1000PA960-6
 K
 Governor no. : 0 421 815 306

Customer-spec. information
 Customer : MAN

Engine : D2866LF06

1st version kw : 309.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90
 : (4.75...4.95)
 Rack travel in mm : 15.00...16.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.40...4.60
 & maximum rack tra: 15.0...16.0
 Difference ° CS : 1.75...3.25

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.50...13.60

Del.quantity cm³/ : 28.5...28.7

100 s: (28.2...29.0)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.0...5.4

Del.quantity cm³/ : 2.9...3.5

100 s: (2.6...3.8)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1055
 travel mm : 10.40...10.60

2nd speed rpm : 300
 travel mm : 1.90...2.30

3rd speed rpm : 500
 travel mm : 3.50...4.10

4th speed rpm : 750
 travel mm : 6.80...7.20

5th speed rpm : 1350
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1120

Rack travel in mm : 10.20...14.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900
Aneroid pressure h : 1200
Del.quantity : 285.0...287.0
1000 : (282.0...290.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 296...304

Testing:

1st rack travel in: 12.20
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1125...1155
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 249...257

Testing:

Speed rpm : 100
Minimum rack travel: 6.70
Speed rpm : 300
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

Speed rpm : 320...440

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 13.50...13.60
2nd speed rpm : 1000
Rack travel in m: 13.10...13.30
3rd speed rpm : 750
Rack travel in m: 12.70...12.90
4th speed rpm : 400
Rack travel in m: 11.50...11.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 13.50...13.60

Measurement

Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 8.90...9.10
2nd pressure hPa : 220
Rack travel in m: 9.50...9.60
3rd pressure hPa : 720
Rack travel in m: 11.90...12.20

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1000
Del.quantity cm³/ : 261.0...267.0
1000 s: (258.0...270.0)
Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm³/ : 271.0...277.0
1000 s: (268.0...280.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 166.0...168.0
1000 s: (163.0...171.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.20
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 210.0...230.0
1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.30...5.40
Del.quantity cm³/ : 29.0...35.0
1000 s: (26.0...38.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR 3-7205

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 6
start of delivery



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 z1
 Edition : 31.07.92
 Replaces : 01.92
 Test oil : ISO-4113
 Combination no. : 0 402 736 828
 Injection pump
 Pump designation : PES6P120A720/3LS7251
 EP type number : 0 412 726 860
 Governor
 Governor design. : RQV300...1000PA960-7
 K
 Governor no. : 0 421 815 307

Customer-spec. information
 Customer : MAN

Engine : 02866LFD9
 1st version kW : 309.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 015
 Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90
 : (4.75...4.95)
 Rack travel in mm : 15.00...16.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300
 Tolerances * - ° : 0.50 (0.75)
 Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 900
 Rack travel in mm : 13.90...14.00
 Del. quantity cm³/ : 29.9...30.1
 100 s: (29.6...30.4)
 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.0...5.4
 Del. quantity cm³/ : 2.9...3.5
 100 s: (2.6...3.8)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1055
 travel mm : 10.40...10.60
 2nd speed rpm : 300
 travel mm : 2.00...2.40
 3rd speed rpm : 450
 travel mm : 3 40...4.00
 4th speed rpm : 750
 travel mm : 6.80...7.20
 5th speed rpm : 1350
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -
 Speed rpm : 1,20
 Rack travel in mm : 10.50...14.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 900

Aneroid pressure h: 1200
Del. quantity : 299.0...301.0
1000 : (296.0...304.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 296...304

Testing:

1st rack travel in: 12.50
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1135...1165
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 247...255

Testing:

Speed rpm : 200
Minimum rack travel: 6.70
Speed rpm : 300
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

Speed rpm : 300...420

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 13.90...14.00
2nd speed rpm : 1000
Rack travel in m: 13.40...13.60
3rd speed rpm : 750
Rack travel in m: 13.30...13.50
4th speed rpm : 400
Rack travel in m: 11.90...12.10

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 13.90...14.00

Measurement

Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 9.00...9.20

M01

2nd pressure hPa : 220
Rack travel in m: 9.40...9.50
3rd pressure hPa : 720
Rack travel in m: 11.80...12.10

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1000
Del. quantity cm³/ : 272.0...278.0
1000 s: (269.0...281.0)
Aneroid pressure h: 1200
Speed rpm : 750
Del. quantity cm³/ : 289.0...295.0
1000 s: (286.0...298.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 168.0...170.0
1000 s: (165.0...173.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.50
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 190.0...220.0
1000 s: (186.0...224.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.00...5.40
Del. quantity cm³/ : 29.0...35.0
1000 s: (26.0...38.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 3-7207

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 6
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 736 832
 Injection pump
 Pump designation : PES6P120A720/3LS7161
 -11
 EP type number : 0 412 726 877
 Governor
 Governor design. : RQV300...1050PA940-3
 Governor no. : 0 421 813 827

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM447 A

1st version kW : 213.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.10...14.30

Del. quantity cm³/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.2...6.8

Del. quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.6

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.50...1.00

2nd speed rpm : 575
 travel mm : 4.30...4.80

3rd speed rpm : 830
 travel mm : 5.90...6.40

4th speed rpm : 1108
 travel mm : 8.10...8.60

5th speed rpm : 1190
 travel mm : 9.70...10.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1085

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 681
Del.quantity : 201.0...203.0
1000 : (198.0...206.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:
1st rack travel in: 12.50
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 82...90

Testing:
Speed rpm : 200
Minimum rack travel: 8.60
Speed rpm : 300
Rack travel in mm : 6.40...6.60

CONSTANT REGULATION
Speed rpm : 300...450

TORQUE CONTROL
Dimension a mm : 1.20
2nd speed rpm : 1050
Rack travel in m: 13.50...13.70
3rd speed rpm : 750
Rack travel in m: 14.70...14.90

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 680
Rack travel mm : 14.10...14.30

Measurement
Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 12.40...12.60
2nd pressure hPa : 400
Rack travel in m: 13.10...13.30

3rd pressure hPa : 800
Rack travel in m: 14.20...14.30 *
4th pressure hPa : -
Rack travel in m: 11.30...11.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm³/ : 193.0...195.0
1000 s: (190.0...198.0)

Spread cm³ : 8.00
1000 s: (12.0)

Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm³/ : 218.0...222.0
1000 s: (215.0...225.0)

Spread cm³ : 8.00
1000 s: (12.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 144.0...146.0
1000 s: (141.0...149.0)

Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.50
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 170.0...190.0
1000 s: (166.0...194.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 736 833
 Injection pump
 Pump designation : PES6P120A72OLS7161
 -11
 EP type number : 0 412 726 877
 Governor
 Governor design. : RQ300/1050PA897
 Governor no. : 0 421 801 452

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM447 A

1st version kW : 213.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.10...14.30

Del. quantity cm³/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.4

Del. quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.6

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 680

Del. quantity : 201.0...203.0

1000 : (198.0...206.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.50
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack travel: 7.70
Speed rpm : 300
Rack travel in mm : 6.00...6.40
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 13.50...13.70
2nd speed rpm : 750
Rack travel in m: 14.80...15.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 680
Rack travel mm : 14.10...14.30

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 12.40...12.60
2nd pressure hPa : 400
Rack travel in m: 13.10...13.30
3rd pressure hPa : 800
Rack travel in m: 14.20...14.30 *
4th pressure hPa : -
Rack travel in m: 11.30...11.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm3/ : 193.0...195.0
1000 s: (190.0...198.0)
Spread cm3 : 3.00
1000 s: (12.0)
Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm3/ : 218.0...222.0
1000 s: (215.0...225.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 144.0...146.0
1000 s: (141.0...149.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.50
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 190.0...210.0
1000 s: (186.0...214.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 9,5 a 1
 Edition : 21.05.92
 Replaces : 12.90
 Test oil : ISO-4113
 Combination no. : 0 402 746 857
 Injection pump
 Pump designation : PES6P120A72ORS7177
 EP type number : 0 412 726 823
 Governor
 Governor design. : RQ275/1100PA915
 Governor no. : C 421 801 478

Customer-spec. information
 Customer : IVECO-UNIC

Engine : 8460.21.601

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 008
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 9.00...12.00

MD6

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100
 Rack travel in mm : 12.30...12.40
 Del. quantity cm³/ : 18.3...18.5
 100 s : (18.0...18.8)
 Spread cm³ : 0.5
 100 s : (0.9)

2nd speed rpm : 275.0
 Rack travel in mm : 5.7...5.9
 Del. quantity cm³/ : 1.6...2.2
 100 s : (1.3...2.5)
 Spread cm³ : 0.8
 100 s : (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Aneroid pressure h : 900
 Del. quantity : 183.0...185.0
 1000 : (180.0...188.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600
 Rack travel in mm : 20.0

Testing:
 1st rack travel in: 11.30
 Speed rpm : 1145...1160
 2nd rack travel in: 4.00
 Speed rpm : 1230...1260

4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 275
Rack travel in mm : 5.8

Testing:

Speed rpm : 100
Minimum rack travel: 7.30
Speed rpm : 275
Rack travel in mm : 5.70...5.90

CONSTANT REGULATION

Speed rpm : 330...370

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.60...12.70
2nd speed rpm : 600
Rack travel in m: 12.60...12.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.30...12.40

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.90...10.10
2nd pressure hPa : 320
Rack travel in m: 11.70...11.80
3rd pressure hPa : 260
Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 119.0...121.0
1000 s: (116.0...124.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.30
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 125.0...155.0
1000 s: (121.0...159.0)

Remarks:

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 12,0 i
 Edition : 26.06.92
 Replaces : 01.92
 Test oil : ISO-4113
 Combination no. : 0 402 746 878
 Injection pump
 Pump designation : PES6P120A320RS7191
 EP type number : 0 412 726 828
 Governor
 Governor design. : RQV275...1000PA927
 Governor no. : 0 421 813 808

Customer-spec. information
 Customer : RVI

Engine : MIDR 06-35-40

1st version kw : 314.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90
 : (4.75...4.95)
 Rack travel in mm : 12.50...13.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 600
 Rack travel in mm : 14.00...14.10
 Del.quantity cm³/ : 28.7...28.9
 100 s: (28.4...29.2)
 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 275.0
 Rack travel in mm : 9.1...9.5
 Del.quantity cm³/ : 2.0...2.6
 100 s: (1.7...2.9)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL
 1st speed rpm : 275
 travel mm : 1.10...1.50
 2nd speed rpm : 500
 travel mm : 3.60...4.20
 3rd speed rpm : 700
 travel mm : 5.50...5.90
 4th speed rpm : 1000
 travel mm : 7.60...7.80
 5th speed rpm : 1400
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION
 Control-lever position
 Degree: -1
 Speed rpm : 1060
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 600
 Aneroid pressure h: 900
 Del.quantity : 287.5...289.5
 1000 : (284.5...292.5)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 300...308

Testing:

1st rack travel in: 13.00
Speed rpm : 1065...1075
2nd rack travel in: 10.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 245...253

Testing:

Speed rpm : 200
Minimum rack travel: 5.90
Speed rpm : 275
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION

Speed rpm : 330...430

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 14.00...14.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.50...9.90
2nd pressure hPa : 520
Rack travel in m: 13.30...13.40
3rd pressure hPa : 200
Rack travel in m: 10.06...11.00

START CUT-OUT

Speed 1/min : 225 (245)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 1000

Del.quantity cm³/ : 264.0...270.0
1000 s: (261.0...273.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 168.0...170.0
1000 s: (165.0...173.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.00
Speed rpm : 1065...1075

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 156.0...186.0
1000 s: (152.0...190.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.50...4.90
Del.quantity cm³/ : 20.0...26.0
1000 s: (17.0...29.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 6,2 i
 Edition : 03.04.92
 Replaces : 06.91
 Test oil : ISO-4113

Combination no. : 0 402 746 894

Injection pump
 Pump designation : PES6P110A320RS7208
 EP type number : 0 412 716 803
 Governor
 Governor design. : RGV275...1175PA942
 -1K
 Governor no. : 0 421 815 244

Customer-spec. information
 Customer : RVI

Engine : MIDRO60226 M

1st version kW : 210.0
 Rated speed : 2350

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.10...4.20
 : (4.05...4.25)

Rack travel in mm : 13.00...14.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 14.00...14.10
 & maximum rack tra: 20.0...21.0
 Difference ° CS : 2.75...4.25

BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 14.00...14.10

Del.quantity cm³/ : 17.0...17.2

100 s: (16.7...17.4)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 4.9...5.5

Del.quantity cm³/ : 1.9...2.3

100 s: (1.6...2.5)

Spread cm³ : 0.4

100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1250

travel mm : 9.10...9.20

2nd speed rpm : 275

travel mm : 0.90...1.10

3rd speed rpm : 550

travel mm : 3.80...4.20

4th speed rpm : 1000

travel mm : 7.00...7.40

5th speed rpm : 1600

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1400

Rack travel in mm : 11.70...14.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1175
Aneroid pressure h : 1000
Del.quantity : 170.0...172.0
1000 : (167.5...174.5)
Spread cm³ : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 110...118

Testing:
1st rack travel in: 13.00
Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1415...1445
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever
position degrees: 56...64

Testing:
Speed rpm : 200
Minimum rack travel: 5.80
Speed rpm : 275
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

Speed rpm : 350...480

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1175
Rack travel in m: 14.00...14.10
2nd speed rpm : 700
Rack travel in m: 13.25...13.45
3rd speed rpm : 800
Rack travel in m: 13.50...13.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1175
Pressure hPa : 1000
Rack travel mm : 14.00...14.10

Measurement

Speed 1/min : 1175

1st pressure hPa : -

M11

Rack travel in m: 10.40...11.00
2nd pressure hPa : 520
Rack travel in m: 12.50...12.60
3rd pressure hPa : 240
Rack travel in m: 11.10...11.50

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 700
Del.quantity cm³/ : 148.0...154.0
1000 s: (145.0...157.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 74.0...76.0
1000 s: (71.5...78.5)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.00
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 90.0...120.0
1000 s: (86.0...124.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.90...5.50
Del.quantity cm³/ : 19.0...23.0
1000 s: (16.5...25.5)
Spread cm³ : 4.50
1000 s: (7.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 h2
 Edition : 21.05.92
 Replaces : 02.91
 Test oil : ISO-4113

Combination no. : 0 402 746 896

Injection pump
 Pump designation : PES6P120A720RS7200
 EP type number : 0 412 726 833
 Governor
 Governor design. : RQV325...900PA944-11
 K

Governer no. : 0 421 815 260

Customer-spec. information
 Customer : MACK TRUCKS

Engine : E7-350

1st version kW : 261.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 2 417 413 011

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 11.00...13.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Phasing :
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

 Rack travel in mm : 14.50...14.60

 Del.quantity cm³/ : 27.7...27.9
 100 s: (27.4...28.2)

 Spread cm³ : 0.5

 100 s: (0.9)

2nd speed rpm : 340.0
 Rack travel in mm : 4.6...4.8
 Del.quantity cm³/ : 3.1...3.7
 100 s: (2.9...3.9)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.40...1.60
 2nd speed rpm : 450
 travel mm : 2.80...3.20
 3rd speed rpm : 700
 travel mm : 6.00...6.40
 4th speed rpm : 900
 travel mm : 8.50...8.70
 5th speed rpm : 1050
 travel mm : 9.80...10.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 900
 Aneroid pressure h: 1200
 Del.quantity : 277.5...279.5
 1000 : (274.5...282.5)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 59...67

Testing:
1st rack travel in: 13.50
Speed rpm : 940...990
2nd rack travel in: 4.00
Speed rpm : 1115...1125
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 8...16

Testing:
Speed rpm : 275
Minimum rack travel: 6.00
Speed rpm : 340
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 14.50...14.60
2nd speed rpm : 625
Rack travel in m: 13.80...14.00
3rd speed rpm : 675
Rack travel in m: 13.80...14.00
4th speed rpm : 500
Rack travel in m: 11.90...12.70

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 14.50...14.60

Measurement
Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 7.90...8.30
2nd pressure hPa : 400
Rack travel in m: 9.80...9.90
3rd pressure hPa : 775
Rack travel in m: 12.60...13.00

START CUT-OUT

Speed 1/min : 250 (255)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 625
Del.quantity cm³/ : 290.0...296.0
1000 s: (287.0...299.0)
Spread cm³ : 8.00
1000 s: (12.0)
Speed rpm : 875
Del.quantity cm³/ : 199.0...201.0 *
1000 s: (180.5...207.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm³/ : 150.0...154.0
1000 s: (148.0...156.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.50
Speed rpm : 940...990

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 170.0...210.0
1000 s: (160.0...220.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 340
Rack travel in mm : 4.60...4.80
Del.quantity cm³/ : 31.0...37.0
1000 s: (29.0...39.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks: : MACK # 313GC5188-P12

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Bow dimension:
Sliding-sleeve position = 37.0 mm
* This test specification applies only
to the engine/nozzle-and-holder
assemblies on an injection-pump test

bench: setting for test equipment,
check value for engine equipment.



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 h1
 Edition : 21.05.92
 Replaces : 02.91
 Test oil : ISO-4113

Combination no. : 0 402 746 897

Injection pump
 Pump designation : PES6P120A720RS7200
 EP type number : 0 412 726 833
 Governor
 Governor design. : RQV325...875PA944-12
 K

Governer no. : 0 421 815 261

Customer-spec. information
 Customer : MACK TRUCKS

Engine : EM7-300

1st version kW : 224.0
 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

M15

Test pressure, bar: 22...24

Prestroke mm : 3.25...3.35
 : (3.20...3.40)
 Rack travel in mm : 11.00...13.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Phasing :
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

 Rack travel in mm : 14.20...14.30

 Del.quantity cm³/ : 25.5...25.7
 100 s : (25.2...26.0)

 Spread cm³ : 0.5
 100 s : (0.9)

2nd speed rpm : 340.0
 Rack travel in mm : 4.6...4.8
 Del.quantity cm³/ : 3.1...3.7
 100 s : (2.9...3.9)
 Spread cm³ : 0.8
 100 s : (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.40...1.60
 2nd speed rpm : 450
 travel mm : 3.30...3.70
 3rd speed rpm : 700
 travel mm : 7.90...8.30
 4th speed rpm : 900
 travel mm : 9.40...9.60
 5th speed rpm : 1050
 travel mm : 10.60...11.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 875
 Aneroid pressure h: 1200
 Del.quantity : 255.0...257.0
 1000 : (252.0...260.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 61...69

Testing:

1st rack travel in: 13.20
Speed rpm : 915...965
2nd rack travel in: 4.00
Speed rpm : 1075...1085
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 8...16

Testing:

Speed rpm : 275
Minimum rack travel: 6.00
Speed rpm : 340
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 875
Rack travel in m: 14.20...14.30
2nd speed rpm : 510
Rack travel in m: 14.80...15.00
3rd speed rpm : 575
Rack travel in m: 14.80...15.00
4th speed rpm : 450
Rack travel in m: 13.90...14.30

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 510
Pressure hPa : 1200
Rack travel mm : 14.80...15.00

Measurement

Speed 1/min : 510

1st pressure hPa : -
Rack travel in m: 8.70...9.10
2nd pressure hPa : 370
Rack travel in m: 10.30...10.40
3rd pressure hPa : 760
Rack travel in m: 13.30...13.70

START CUT-OUT

Speed 1/min : 250 (255)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 510
Del.quantity cm³/ : 334.0...340.0
1000 s: (331.0...343.0)
Spread cm³ : 8.00
1000 s: (12.0)
Speed rpm : 875
Del.quantity cm³/ : 199.0...201.0 *
1000 s: (159.5...183.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm³/ : 156.0...160.0
1000 s: (154.0...162.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.20
Speed rpm : 915...965

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 190.0...230.0
1000 s: (180.0...240.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 340
Rack travel in mm : 4.60...4.80
Del.quantity cm³/ : 31.0...37.0
1000 s: (29.0...39.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5188-P10

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Bow dimension:

Sliding-sleeve position = 37.0 mm
* This test specification applies only
to the engine/nozzle-and-holder
assemblies on an injection-pump test

bench: setting for test equipment,
check value for engine equipment.



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI 9,5 i
 Edition : 26.06.92
 Replaces : 06.91
 Test oil : ISO-4113

Combination no. : 0 402 746 901

Injection pump
 Pump designation : PES6P120A72ORS7224
 EP type number : 0 412 726 840
 Governor
 Governor design. : RQVZ75...1100PA975K
 Governor no. : 0 421 815 266

Customer-spec. information
 Customer : IVECO-UNIC

Engine : 8460.41.406

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 105

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.10...5.20
 : (5.05...5.25)

Rack travel in mm : 9.00...12.00

M18

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.40...12.50

Del.quantity cm³/ : 23.4...23.6
 100 s: (23.1...23.9)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 275.0
 Rack travel in mm : 4.7...5.1
 Del.quantity cm³/ : 3.2...3.8
 100 s: (2.9...4.1)

Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1145
 travel mm : 10.30...10.50

2nd speed rpm : 275
 travel mm : 1.30...1.50

3rd speed rpm : 450
 travel mm : 3.40...4.00

4th speed rpm : 750
 travel mm : 5.90...6.30

5th speed rpm : 1350
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1140
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Aneroid pressure h: 1200
 Del.quantity : 234.0...236.0
 1000 : (231.0...239.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 115...123

Testing:

1st rack travel in: 11.40
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 65...73

Testing:

Speed rpm : 100
Minimum rack travel: 6.40
Speed rpm : 275
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION

Speed rpm : 270...400

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.40...12.50
2nd speed rpm : 900
Rack travel in m: 12.30...12.60
3rd speed rpm : 700
Rack travel in m: 11.90...12.10
4th speed rpm : 500
Rack travel in m: 11.20...11.50
5th speed rpm : 350
Rack travel in m: 10.80...11.20

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 12.40...12.50

Measurement

Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 7.40...7.60
2nd pressure hPa : 710

Rack travel in m: 11.20...11.30
3rd pressure hPa : 400
Rack travel in m: 8.60...9.00

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 900
Del.quantity cm³/ : 240.0...246.0
1000 s: (237.0...249.0)
Aneroid pressure h: 1200
Speed rpm : 500
Del.quantity cm³/ : 246.0...252.0
1000 s: (243.0...255.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 119.0...121.0
1000 s: (116.0...124.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.40
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 150.0...180.0
1000 s: (146.0...184.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.70...5.10
Del.quantity cm³/ : 32.0...38.0
1000 s: (29.0...41.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI 9,5 i 1
 Edition : 26.06.92
 Replaces : 06.91
 Test oil : ISO-4113

Combination no. : 0 402 746 902

Injection pump
 Pump designation : PES6P120A720RS7224
 EP type number : 0 412 726 840
 Governor
 Governor design. : RQV275...1100PA975-1
 K
 Governor no. : 0 421 815 267

Customer spec. information
 Customer : IVECO-UNIC

Engine : 8460.41.320

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.10...5.20
 : (5.05...5.25)

M20

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.20...11.30

Del. quantity cm³/ : 20.9...21.1
 100 s : (20.6...21.4)

Spread cm³ : 0.5
 100 s : (0.9)

2nd speed rpm : 275.0
 Rack travel in mm : 5.1...5.5
 Del. quantity cm³/ : 3.2...3.8
 100 s : (2.9...4.1)

Spread cm³ : 0.8
 100 s : (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1145
 travel mm : 10.30...10.50

2nd speed rpm : 275
 travel mm : 1.30...1.50

3rd speed rpm : 450
 travel mm : 3.40...4.00

4th speed rpm : 750
 travel mm : 5.90...6.30

5th speed rpm : 1350
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1140
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Aneroid pressure h: 1200
 Del. quantity : 209.0...211.0
 1000 : (206.0...214.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 115...123

Testing:

1st rack travel in: 10.20
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1200...1230
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 64...72

Testing:

Speed rpm : 100
Minimum rack travel: 6.80
Speed rpm : 275
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

Speed rpm : 270...400

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.20...11.30
2nd speed rpm : 900
Rack travel in m: 10.70...10.90
3rd speed rpm : 700
Rack travel in m: 9.90...10.10
4th speed rpm : 400
Rack travel in m: 9.30...9.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1100
Pressure hPa : 1200
Rack travel mm : 11.20...11.30

Measurement

Speed 1/min : 1100

1st pressure hPa : -
Rack travel in m: 7.70...7.90
2nd pressure hPa : 600
Rack travel in m: 10.60...10.70
3rd pressure hPa : 420

M21

Rack travel in m: 9.10...9.50

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 700
Del.quantity cm³/ : 188.0...194.0
1000 s: (185.0...197.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 120.0...122.0
1000 s: (117.0...125.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 10.20
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 150.0...180.0
1000 s: (146.0...184.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.10...5.50
Del.quantity cm³/ : 32.0...38.0
1000 s: (29.0...41.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI 9,5 i 2
 Edition : 26.06.92
 Replaces : 06.91
 Test oil : ISO-4113

Combination no. : G 402 746 903

Injection pump
 Pump designation : PES6P120A720RS7224
 EP type number : 0 412 726 840
 Governor
 Governor design. : RQV275...1100PA888-1
 K
 Governor no. : 0 421 815 268

Customer-spec. information
 Customer : IVECO-UNIC

Engine : 8460.41.160

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.10...5.20
 : (5.05...5.25)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 11.80...11.90

Del.quantity cm3/ : 22.4...22.6

100 s: (22.1...22.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.2...5.6

Del.quantity cm3/ : 3.0...3.6

100 s: (2.7...3.9)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1145
 travel mm : 10.10...10.30

2nd speed rpm : 275
 travel mm : 1.10...1.30

3rd speed rpm : 400
 travel mm : 2.50...3.10

4th speed rpm : 750
 travel mm : 5.50...5.90

5th speed rpm : 1350
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 900

Del.quantity : 224.0...226.0

1000 : (221.0...229.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:

1st rack travel in: 10.60
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1200...1230
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 66...74

Testing:

Speed rpm : 100
Minimum rack travel: 6.90
Speed rpm : 275
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

Speed rpm : 270...400

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 11.80...11.90
2nd speed rpm : 1100
Rack travel in m: 11.60...11.80
3rd speed rpm : 700
Rack travel in m: 11.20...11.40
4th speed rpm : 400
Rack travel in m: 10.70...11.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 850
Pressure hPa : 900
Rack travel mm : 11.80...11.90

Measurement

Speed 1/min : 850

1st pressure hPa : -
Rack travel in m: 8.10...8.30
2nd pressure hPa : 640
Rack travel in m: 10.90...11.00
3rd pressure hPa : 400

M23

Rack travel in m: 8.90...9.20

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 1100
Del.quantity cm³/ : 210.0...216.0
1000 s: (207.0...219.0)
Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm³/ : 220.0...226.0
1000 s: (217.0...229.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 127.0...129.0
1000 s: (124.0...132.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 10.60
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 150.0...180.0
1000 s: (146.0...184.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.20...5.60
Del.quantity cm³/ : 30.0...36.0
1000 s: (27.0...39.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,8 o
 Edition : 03.04.92
 Replaces : 07.91
 Test oil : ISO-4113

Combination no. : 0 402 746 908

Injection pump
 Pump designation : PES6P120A32ORS7232
 EP type number : 0 412 726 846
 Governor
 Governor design. : RGV275...1000PA1001
 Governor no. : 0 421 813 931

Customer-spec. information
 Customer : RVI

Engine : MIDR 062045 E/3

1st version kW : 249.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.65...4.75
 : (4.60...4.80)
 Rack travel in mm : 18.00...21.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.60...13.70

Del.quantity cm³/ : 26.1...26.3
 100 s : (25.8...26.6)

Spread cm³ : 0.5
 100 s : (0.9)

2nd speed rpm : 275.0
 Rack travel in mm : 5.3...5.7
 Del.quantity cm³/ : 2.9...3.3
 100 s : (2.6...3.6)
 Spread cm³ : 0.8
 100 s : (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1070
 travel mm : 8.20...8.40
 2nd speed rpm : 275
 travel mm : 1.10...1.50
 3rd speed rpm : 500
 travel mm : 3.60...4.20
 4th speed rpm : 850
 travel mm : 6.40...6.80
 5th speed rpm : 1400
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1165
 Rack travel in mm : 12.30...14.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 600
 Aneroid pressure h: 1000
 Del.quantity : 261.0...263.0
 1000 : (258.0...266.0)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 298...306

Testing:

1st rack travel in: 12.60
Speed rpm : 1065...1075
2nd rack travel in: 4.00
Speed rpm : 1200...1230
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 243...251

Testing:

Speed rpm : 175
Minimum rack travel: 7.00
Speed rpm : 275
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

Speed rpm : 310...430

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.60...13.70

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.20...9.60
2nd pressure hPa : 520
Rack travel in m: 12.70...12.80
3rd pressure hPa : 200
Rack travel in m: 10.10...10.30

START CUT-OUT

Speed 1/min : 225 (245)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1000

M25

Del. quantity cm3/ : 237.0...243.0
1000 s: (234.0...246.0)

Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm3/ : 126.0...128.0
1000 s: (123.0...131.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.60
Speed rpm : 1065...1075

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm3/ : 140.0...170.0
1000 s: (136.0...174.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.30...5.70
Del. quantity cm3/ : 29.0...33.0
1000 s: (26.0...36.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 12,0 k
 Edition : 24.07.92
 Replaces : 06.91
 Test oil : ISO-4113

Combination no. : 0 402 746 909

Injection pump
 Pump designation : PES6P120A32ORS7236
 EP type number : 0 412 726 848
 Governor
 Governor design. : RGV275...1000PA1001-
 1

Governer no. : 0 421 813 936

Customer-spec. information

Customer : RVI

Engine : MIDR 063540 J/3

1st version kW : 306.0

Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
 : (4.45...4.65)
 Rack travel in mm : 13.60...14.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.60...13.70

Del.quantity cm³/ : 30.1...30.3

100 s: (29.8...30.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 4.9...5.3

Del.quantity cm³/ : 2.7...3.3

100 s: (2.4...3.6)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1070
 travel mm : 8.30...8.50

2nd speed rpm : 275
 travel mm : 1.10...1.50

3rd speed rpm : 500
 travel mm : 3.60...4.20

4th speed rpm : 750
 travel mm : 5.70...6.10

5th speed rpm : 1400
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 301.0...303.0
1000 : (298.0...306.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 298...306

Testing:

1st rack travel in: 12.60
Speed rpm : 1065...1075
2nd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 242...250

Testing:

Speed rpm : 200
Minimum rack travel: 6.20
Speed rpm : 275
Rack travel in mm : 5.00...5.20

CONSTANT REGULATION

Speed rpm : 310...430

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.60...13.70

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.50...9.90
2nd pressure hPa : 600
Rack travel in m: 12.60...12.70
3rd pressure hPa : 240
Rack travel in m: 9.60...10.00

START CUT-OUT

Speed 1/min : 225 (245)

FUEL DELIVERY CHARACTERISTICS

1st version

M27

Aneroid pressure h: 1000
Speed rpm : 1000
Del.quantity cm³/ : 276.0...282.0
1000 s: (273.0...285.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 145.0...147.0
1000 s: (142.0...150.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.60
Speed rpm : 1065...1075

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 150.0...170.0
1000 s: (146.0...174.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.90...5.30
Del.quantity cm³/ : 27.0...33.0
1000 s: (24.0...36.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 746 913X

Injection pump
 Pump designation : PES6P120A720LS7237-1
 EP type number : 0 412 726 872
 Governor
 Governor design. : RQ300/1100PA1008-1
 Governor no. : 0 421 801 592

Cust. part no. : 0200747802

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM447 hA

1st version kW : 184.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.60...13.80

Del.quantity cm³/ : 19.6...19.8

100 s: (19.3...20.1)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.2...6.8

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1400

Del.quantity : 196.0...198.0

1000 : (193.0...201.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.70
Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:

Speed rpm : 200
Minimum rack travel: 8.30
Speed rpm : 300
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 370...410

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1400
Rack travel mm : 13.60...13.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.70...11.90
2nd pressure hPa : 600
Rack travel in m: 12.20...12.30
3rd pressure hPa : 950
Rack travel in m: 12.90...13.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm³/ : 199.0...203.0
1000 s: (196.0...206.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 139.0...141.0
1000 s: (136.0...144.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 60.0...80.0
1000 s: (56.0...84.0)
Rack travel in mm : 11.70...12.10

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 746 916X

Injection pump
 Pump designation : PES6P120A720LS7237-1
 EP type number : 0 412 726 872
 Governor
 Governor design. : RQ300/1100PA1010
 Governor no. : 0 421 801 596

Cust. part no. : 0200747902

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM447 hA

1st version kW : 184.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.60...13.80

Del.quantity cm³/ : 19.6...19.8

100 s: (19.3...20.1)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.2...6.8

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1400

Del.quantity : 196.0...198.0

1000 : (193.0...201.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.70
Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1500
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:

Speed rpm : 200
Minimum rack trave: 8.30
Speed rpm : 300
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 370...410

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1400
Rack travel mm : 13.60...13.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.70...11.90
2nd pressure hPa : 600
Rack travel in m: 12.20...12.30
3rd pressure hPa : 950
Rack travel in m: 12.90...13.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm3/ : 199.0...203.0
1000 s: (196.0...206.0)

Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 139.0...141.0
1000 s: (136.0...144.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.70
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...230.0
1000 s: (206.0...234.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 746 919X
 Injection pump
 Pump designation : PES6P120A720LS7237-1
 EP type number : 0 412 726 872
 Governor
 Governor design. : RQ300/1100PA1013-1
 Governor no. : 0 421 801 603

Cust. part no. : 0220743402

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM447 hA

1st version kW : 184.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6-2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.70...13.90

Del. quantity cm³/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.2...6.8

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1400

Del. quantity : 201.0...203.0

1000 : (198.0...206.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.80
Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:

Speed rpm : 200
Minimum rack travel: 8.30
Speed rpm : 300
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 370...410

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1400
Rack travel mm : 13.70...13.90

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.70...11.90
2nd pressure hPa : 600
Rack travel in m: 12.20...12.30
3rd pressure hPa : 950
Rack travel in m: 12.90...13.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 139.0...141.0
1000 s: (136.0...144.0)

Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.80
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 746 923X

Injection pump
 Pump designation : PES6P120A720LS7237
 -11

EP type number : 0 412 726 872
 Governor
 Governor design. : RQ300/1100PA1013-2
 Governor no. : 0 421 801 611

Cust. part no. : 0220743502

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM447 HA

1st version kW : 184.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6-2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.60...13.80

Del.quantity cm³/ : 19.6...19.8

100 s: (19.3...20.1)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.2...6.8

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1400

Del.quantity : 196.0...198.0

1000 : (193.0...201.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.70
Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300
Rack travel in mm : 6.5

Testing:

Speed rpm : 200
Minimum rack travel: 8.30
Speed rpm : 300
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 370...410

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1400
Rack travel mm : 13.60...13.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.70...11.90
2nd pressure hPa : 600
Rack travel in m: 12.20...12.30
3rd pressure hPa : 950
Rack travel in m: 12.90...13.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm3/ : 199.0...203.0
1000 s: (196.0...206.0)

Spread cm3 : 8.00
1000 s: (12.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 139.0...141.0
1000 s: (136.0...144.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.70
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI
 Edition : 30.04.92
 Replaces : 02.92
 Test oil : ISO-4113

Combination no. : 0 402 746 931

Injection pump
 Pump designation : PES6P120A320RS7236
 EP type number : 0 412 726 848
 Governor
 Governor design. : RQV275...1000PA1001-
 2

Governer no. : 0 421 813 989

Customer-spec. information
 Customer : RVI

Engine : MIDR D63540 N/3

1st version kW : 283.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

NO8

Prestroke mm : 4.50...4.60
 : (4.45...4.65)
 Rack travel in mm : 18.00...21.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.20...13.30

Del.quantity cm3/ : 28.2...28.4
 100 s: (27.9...28.7)

Spread cm3 : 0.5
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 4.8...5.2
 Del.quantity cm3/ : 2.7...3.1
 100 s: (2.4...3.4)
 Spread cm3 : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1080
 travel mm : 8.40...8.60
 2nd speed rpm : 275
 travel mm : 1.20...1.40
 3rd speed rpm : 490
 travel mm : 3.50...4.10
 4th speed rpm : 775
 travel mm : 5.90...6.30
 5th speed rpm : 1450
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1190
 Rack travel in mm : 11.90...14.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 600
 Aneroid pressure h: 1000

Del.quantity : 282.0...284.0
1000 : (279.0...287.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 297...305

Testing:

1st rack travel in: 12.20
Speed rpm : 1065...1075
2nd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 243...251
Rack travel in mm : 8.2

Testing:

Speed rpm : 200
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 310...420

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.20...13.30

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.20...9.60
2nd pressure hPa : 480
Rack travel in m: 12.30...12.40
3rd pressure hPa : 240
Rack travel in m: 10.30...10.70

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1000
Del.quantity cm³/ : 260.0...266.0
1000 s: (257.0...269.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 166.0...168.0
1000 s: (163.0...171.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.20
Speed rpm : 1065...1075

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 145.0...175.0
1000 s: (141.0...179.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.80...5.20
Del.quantity cm³/ : 27.0...31.0
1000 s: (24.0...34.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

:
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE
 Edition : 03.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 746 932
 Injection pump
 Pump designation : PES6P120A72ORS7258
 EP type number : 0 412 726 862
 Governor
 Governor design. : RGV300...1050PA1035
 Governor no. : 0 421 813 995

Customer-spec. information
 Customer : LIEBHERR

Engine : D926Ti

1st version kW : 220.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1050
 Rack travel in mm : 13.40...13.50
 Del.quantity cm3/ : 20.7...20.9
 100 s: (20.4...21.2)
 Spread cm3 : 0.5
 100 s: (0.9)

2nd speed rpm : 350.0
 Rack travel in mm : 6.5...7.1
 Del.quantity cm3/ : 3.0...3.6
 100 s: (2.7...3.9)
 Spread cm3 : 0.6
 100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.70...2.20
 2nd speed rpm : 490
 travel mm : 3.30...3.80
 3rd speed rpm : 780
 travel mm : 6.30...6.80
 4th speed rpm : 1120
 travel mm : 10.30...10.80
 5th speed rpm : 1320
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1200
 Rack travel in mm : 11.10...13.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1050
 Aneroid pressure h: 1500
 Del.quantity : 207.0...209.0
 1000 : (204.0...212.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 102...110

Testing:
1st rack travel in: 12.40
Speed rpm : 1100...1110
2nd rack travel in: 4.00
Speed rpm : 1185...1215
4th rack travel in: 1300
Speed rpm : 0.00...1.40

LOW IDLE 1
Control lever
position degrees: 68...76

Testing:
Speed rpm : 250
Minimum rack travel: 10.00
Speed rpm : 350
Rack travel in mm : 6.70...6.90

CONSTANT REGULATION
Speed rpm : 350...450

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 700
Pressure hPa : 1500
Rack travel mm : 13.40...13.50

Measurement
Speed 1/min : 700

1st pressure hPa : -
Rack travel in m: 10.60...10.80
2nd pressure hPa : 1200
Rack travel in m: 12.90...13.00
3rd pressure hPa : 800
Rack travel in m: 11.10...11.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 700

N11

Del. quantity cm³/ : 154.0...156.0
1000 s: (151.0...159.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.40
Speed rpm : 1100...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 165.0...195.0
1000 s: (161.0...199.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC
 Edition : 31.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 748 807
 Injection pump
 Pump designation : PES8P120A920/4LS7246
 EP type number : 0 412 728 805
 Governor
 Governor design. : RQV325...1000PA1018
 -1K
 Governor no. : 0 421 815 292

Customer-spec. information
 Customer : MACK

Engine : EE9 530
 1st version kW : 395.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 103

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24
 Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 12.00...14.00
 Firing order : 1- 2- 7- 8- 4- 5-
 : 6- 3
 Phasing : 0-45-90-135-180-225-
 : 270-315
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 500
 Rack travel in mm : 13.60...13.70
 Del.quantity cm³/ : 29.3...29.5
 100 s: (29.0...29.8)
 Spread cm³ : 0.6
 100 s: (1.0)
 2nd speed rpm : 325.0
 Rack travel in mm : 5.8...6.0
 Del.quantity cm³/ : 2.4...3.0
 100 s: (2.1...3.3)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.30...1.60
 2nd speed rpm : 450
 travel mm : 2.80...3.20
 3rd speed rpm : 900
 travel mm : 7.50...7.90
 4th speed rpm : 1050
 travel mm : 8.90...9.10
 5th speed rpm : 1300
 travel mm : 11.50...11.90

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1240
 Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 500
Aneroid pressure h: 1200
Del. quantity : 293.0...295.0
1000 : (290.0...298.0)
Spread cm3 : 6.00
1000 : (10.00)

RATED SPEED

1st version

Control lever
position degrees: 62...70

Testing:

1st rack travel in: 15.30
Speed rpm : 1045...1055
2nd rack travel in: 4.00
Speed rpm : 1230...1260
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 10...18

Testing:

Speed rpm : 275
Minimum rack travel: 1.00
Speed rpm : 325
Rack travel in mm : 5.60...5.80

CONSTANT REGULATION

Speed rpm : 325...600

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 500
Rack travel in m: 13.60...13.70
2nd speed rpm : 1000
Rack travel in m: 16.30...16.50
3rd speed rpm : 700
Rack travel in m: 14.10...14.50
4th speed rpm : 400
Rack travel in m: 13.00...13.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1000
Pressure hPa : 1200
Rack travel mm : 16.30...16.50

Measurement

Speed 1/min : 1000

1st pressure hPa : -
Rack travel in m: 9.90...10.30
2nd pressure hPa : 235
Rack travel in m: 11.30...11.40
3rd pressure hPa : 610
Rack travel in m: 14.40...14.80

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1000
Del. quantity cm3/ : 306.5...312.5
1000 s: (303.5...315.5)
Spread cm3 : 10.00
1000 s: (14.0)
Speed rpm : 950
Del. quantity cm3/ : 199.0...201.0 *
1000 s: (186.0...213.5)
Aneroid pressure h: -
Speed rpm : 400
Del. quantity cm3/ : 184.5...188.5
1000 s: (181.5...191.5)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 15.30
Speed rpm : 1045...1055

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm3/ : 150.0...190.0
1000 s: (146.0...194.0)
Rack travel in mm : 11.00...12.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 5.80...6.00
Del. quantity cm3/ : 24.0...30.0
1000 s: (21.0...33.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Bow dimension:

Sliding-sleeve position = 37.0 mm

* This test specification applies only
to the engine/nozzle-and-holder
assemblies on an injection-pump test
bench: setting for test equipment,
check value for engine equipment.



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 24.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 246 031A
 Injection pump
 Pump designation : PES6MW100/72ORS1515
 EP type number : 0 413 206 013
 Governor
 Governor design. : RGV300...1300MW125-1
 Governor no. : 0 420 083 258

Customer-spec. information
 Customer : MB-NFZ

Engine : OM366LA

1st version kW : 127.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 5.20...5.30
 : (5.15...5.35)

Rack travel in mm : 21.00...0.00

N15

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.50...11.60

Del.quantity cm³/ : 9.6...9.8

100 s : (9.4...10.0)

Spread cm³ : 0.3

100 s : (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 3.9...4.2

Del.quantity cm³/ : 1.0...1.4

100 s : (0.7...1.6)

Spread cm³ : 0.3

100 s : (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 7.80...8.20

2nd speed rpm : 880

travel mm : 3.70...4.00

3rd speed rpm : 500

travel mm : 1.70...2.30

4th speed rpm : 300

travel mm : 0.90...1.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h : 10.0

Del.quantity : 96.0...98.0

1000 : (94.0...100.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 107...115

Testing:

1st rack travel in: 10.50

Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1430...1460
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 68...76
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.0

Testing:

Speed rpm : 200
Minimum rack travel: 5.00
Speed rpm : 300
Rack travel in mm : 3.90...4.20

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 8.70...8.90

Measurement

Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 9.40...9.60
2nd pressure hPa : 500
Rack travel in m: 10.80...11.00
3rd pressure hPa : 1000
Rack travel in m: 11.50...11.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 750
Del.quantity cm³/ : 89.0...92.0
1000 s: (86.5...94.5)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 35.0...37.0
1000 s: (33.0...39.0)

BREAKAWAY

N16

1st version
1mm rack travel less than

full load rack tr: 10.50
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 115.0...125.0
1000 s: (112.0...128.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 3.90...4.20
Del.quantity cm³/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,1 I 1
 Edition : 31.07.92
 Replaces : 06.92
 Test oil : ISO-4113
 Combination no. : 0 403 246 032
 Injection pump
 Pump designation : PES6MM100/72ORS1515
 EP type number : 0 413 206 013
 Governor
 Governor design. : RQV300...1300MM125-5
 Governor no. : 0 420 083 285

Customer-spec. information
 Customer : MB-NFZ

Engine : OM366LA

1st version kW : 142.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 932 198
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 601 343 009
 Opening
 pressure, bar : 172...175
 Test lines : 1 680 750 089
 Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32
 Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 21.00...0.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300
 Rack travel in mm : 12.50...12.60
 Del. quantity cm³/ : 11.0...11.2
 100 s : (10.8...11.4)
 Spread cm³ : 0.3
 100 s : (0.6)
 2nd speed rpm : 300.0
 Rack travel in mm : 4.2...4.4
 Del. quantity cm³/ : 1.0...1.4
 100 s : (0.7...1.6)
 Spread cm³ : 0.3
 100 s : (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350
 travel mm : 8.60...9.00
 2nd speed rpm : 880
 travel mm : 4.90...5.10
 3rd speed rpm : 500
 travel mm : 2.70...3.30
 4th speed rpm : 300
 travel mm : 1.20...1.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1300
 Aneroid pressure h: 1100
 Del. quantity : 110.0...112.0
 1000 : (108.0...114.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 120...128

Testing:
 1st rack travel in: 11.50

Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1450...1480
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 62...70
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.3

Testing:

Speed rpm : 200
Minimum rack travel: 5.00
Speed rpm : 300
Rack travel in mm : 4.20...4.40

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.00...9.10

Measurement

Speed 1/min : 500

1st pressure hPa : 250
Rack travel in m: 9.70...9.90
2nd pressure hPa : 500
Rack travel in m: 11.40...11.60
3rd pressure hPa : 1100
Rack travel in m: 12.50...12.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100
Speed rpm : 750
Del.quantity cm³/ : 103.0...106.0
1000 s: (100.5...108.5)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 35.0...37.0
1000 s: (33.0...39.0)

BREAKAWAY

N18

1st version
1mm rack travel less than

full load rack tr: 11.50
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 115.0...125.0
1000 s: (112.0...128.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.20...4.40
Del.quantity cm³/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 246 032A
 Injection pump
 Pump designation : PES6MW100/72ORS1515
 EP type number : 0 413 206 013
 Governor
 Governor design. : RQV300...1300MW125-2
 Governor no. : 0 420 083 259

Customer-spec. information
 Customer : MB-NFZ

Engine : OM366LA

1st version kW : 142.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 5.20...5.30
 : (5.15...5.35)

Rack travel in mm : 21.00...0.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 12.50...12.60

Del.quantity cm³/ : 11.0...11.2

100 s: (10.8...11.4)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 4.2...4.4

Del.quantity cm³/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 7.80...8.20

2nd speed rpm : 880

travel mm : 3.80...4.00

3rd speed rpm : 500

travel mm : 1.70...2.30

4th speed rpm : 300

travel mm : 0.90...1.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1380

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1100

Del.quantity : 110.0...112.0

1000 : (108.0...114.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 107...115

Setting point:
Speed rpm : 1380
Rack travel in mm : 16.5

Testing:
1st rack travel in: 11.50
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1430...1460
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 68...76
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.3

Testing:
Speed rpm : 200
Minimum rack travel: 5.00
Speed rpm : 300
Rack travel in mm : 4.20...4.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.00...9.10

Measurement
Speed 1/min : 500

1st pressure hPa : 250
Rack travel in m: 9.70...9.90
2nd pressure hPa : 500
Rack travel in m: 11.40...11.60
3rd pressure hPa : 1100
Rack travel in m: 12.50...12.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1100
Speed rpm : 750

Del.quantity cm³/ : 100.0...103.0
1000 s: (98.0...105.0)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 35.0...37.0
1000 s: (33.0...39.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.50
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 115.0...125.0
1000 s: (112.0...128.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.20...4.40
Del.quantity cm³/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 24.07.92
 Replaces : 03.92
 Test oil : ISO-4113
 Combination no. : 0 403 246 033
 Injection pump
 Pump designation : PES6MW100/72ORS1511
 EP type number : 0 413 206 011
 Governor
 Governor design. : RQV300...1300MW125-6
 Governor no. : 0 420 083 286

Customer-spec. information
 Customer : MB-NFZ

Engine : OM366LA

1st version kW : 156.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 5.20...5.30
 : (5.15...5.35)

Rack travel in mm : 21.00...0.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 12.60...12.70

Del. quantity cm³/ : 11.8...12.0

100 s: (11.6...12.2)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 4.1...4.3

Del. quantity cm³/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 8.60...9.00

2nd speed rpm : 880

travel mm : 4.90...5.10

3rd speed rpm : 500

travel mm : 2.70...3.30

4th speed rpm : 300

travel mm : 1.20...1.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1400

Del. quantity : 118.0...120.0

1000 : (116.0...122.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 108...116

Testing:

1st rack travel in: 11.60

Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1435...1465
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 68...76
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.2

Testing:

Speed rpm : 200
Minimum rack travel: 5.00
Speed rpm : 300
Rack travel in mm : 4.10...4.30

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 5.80...6.00

Measurement

Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 6.60...6.80
2nd pressure hPa : 900
Rack travel in m: 11.10...11.30
3rd pressure hPa : 1400
Rack travel in m: 12.60...12.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 750
Del.quantity cm³/ : 111.5...114.5
1000 s: (109.0...117.0)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 35.0...37.0
1000 s: (33.0...39.0)

BREAKAWAY

N22

1st version
1mm rack travel less than

full load rack tr: 11.60
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 115.0...125.0
1000 s: (112.0...128.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.10...4.30
Del.quantity cm³/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 24.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : U 403 246 033A
 Injection pump
 Pump designation : PES6MW100/72ORS1511
 EP type number : 0 413 206 011
 Governor
 Governor design. : RQV300...1300MW125
 Governor no. : 0 420 083 257

Customer-spec. information
 Customer : MB-NFZ

Engine : OM366LA

1st version kW : 156.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 5.20...5.30
 : (5.15...5.35)

Rack travel in mm : 21.00...0.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 12.60...12.70

Del. quantity cm³/ : 11.8...12.0

100 s: (11.6...12.2)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 4.1...4.3

Del. quantity cm³/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 7.80...8.20

2nd speed rpm : 880

travel mm : 3.70...4.30

3rd speed rpm : 500

travel mm : 1.70...2.30

4th speed rpm : 300

travel mm : 0.90...1.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1380

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1100

Del. quantity : 118.0...120.0

1000 : (116.0...122.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 107...115

Testing:

1st rack travel in: 11.60
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1435...1465
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 68...76
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.2

Testing:

Speed rpm : 200
Minimum rack travel: 5.00
Speed rpm : 300
Rack travel in mm : 4.10...4.30

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 7.10...7.20

Measurement

Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 8.80...9.00
2nd pressure hPa : 500
Rack travel in m: 10.10...10.30
3rd pressure hPa : 1100
Rack travel in m: 12.60...12.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100
Speed rpm : 750
Del.quantity cm³/ : 111.5...114.5
1000 s: (109.0...117.0)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm³/ : 41.0...43.0
1000 s: (39.0...45.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.60
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 115.0...125.0
1000 s: (112.0...128.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.10...4.30
Del.quantity cm³/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 24.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 444 140
 Injection pump
 Pump designation : PES4MW100/72ORS1151
 EP type number : 0 413 404 104
 Governor
 Governor design. : RQV300...1200MW50-30
 Governor no. : 0 420 083 283

Customer spec. information
 Customer : MB-NFZ

Engine : OM364A

1st version kw : 77.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 047
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test lines : 1 680 750 089
 Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)
 Rack travel in mm : 9.00...12.00

N25

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200
 Rack travel in mm : 10.80...10.90
 Del. quantity cm³/ : 8.6...8.8
 100 s : (8.4...9.0)
 Spread cm³ : 0.3
 100 s : (0.6)
 2nd speed rpm : 300.0
 Rack travel in mm : 6.3...6.5
 Del. quantity cm³/ : 1.0...1.4
 100 s : (0.7...1.6)
 Spread cm³ : 0.3
 100 s : (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350
 travel mm : 8.50...8.90
 2nd speed rpm : 1250
 travel mm : 7.60...7.80
 3rd speed rpm : 500
 travel mm : 2.70...3.30
 4th speed rpm : 300
 travel mm : 1.20...1.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1200
 Aneroid pressure h: 700
 Del. quantity : 86.0...88.0
 1000 : (84.0...90.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 105...113

Testing:
 1st rack travel in: 9.80

Speed rpm : 1250...1260
2nd rack travel in: 4.00
Speed rpm : 1350...1380
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 75...83
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.4

Testing:

Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.30...6.50

TORQUE CONTROL

Dimension a mm : 0.70
Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 10.80...10.90
2nd speed rpm : 600
Rack travel in m: 11.50...11.60
3rd speed rpm : 1100
Rack travel in m: 11.00...11.30

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.50...9.60

Measurement

Speed 1/min : 500
1st pressure hPa : 300
Rack travel in m: 10.00...10.20
2nd pressure hPa : 450
Rack travel in m: 11.20...11.40
3rd pressure hPa : 700
Rack travel in m: 11.50...11.60

START CUT-OUT

Speed 1/min : 200 (230)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 600

Del.quantity cm³/ : 79.0...82.0
1000 s: (76.5...84.5)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 46.0...48.0
1000 s: (44.0...50.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.80
Speed rpm : 1250...1260

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.30...6.50
Del.quantity cm³/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 8,1 D
 Edition : 24.07.92
 Replaces : 09.91
 Test oil : ISO-4113
 Combination no. : 0 403 446 249
 Injection pump
 Pump designation : PES6MW100/72ORS1197
 EP type number : 0 413 406 185
 Governor
 Governor design. : RQV325...1350MW109K
 Governor no. : 0 420 083 997

Customer-spec. information
 Customer : IVECO-FIAT

Engine : 8060.45.6000
 1st version kW : 169.0
 Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10
 : (3.95...4.15)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1350
 Rack travel in mm : 14.00...14.10
 Del.quantity cm³/ : 10.1...10.3
 100 s: (9.9...10.5)
 Spread cm³ : 0.3
 100 s: (0.6)

2nd speed rpm : 325.0
 Rack travel in mm : 7.7...7.9
 Del.quantity cm³/ : 2.5...2.9
 100 s: (2.2...3.1)
 Spread cm³ : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1400
 travel mm : 10.00...10.40
 2nd speed rpm : 825
 travel mm : 4.90...5.10
 3rd speed rpm : 400
 travel mm : 2.90...3.50
 4th speed rpm : 325
 travel mm : 1.50...1.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1350
 Aneroid pressure h: 850
 Del.quantity : 101.0...103.0
 1000 : (99.0...105.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 117...125

Testing:

1st rack travel in: 13.00
Speed rpm : 1420...1430
2nd rack travel in: 4.00
Speed rpm : 1520...1550
4th rack travel in: 1650
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 78...86
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 7.8

Testing:

Speed rpm : 200
Minimum rack travel: 10.00
Speed rpm : 325
Rack travel in mm : 7.70...7.90

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1350
Rack travel in m: 14.00...14.10
2nd speed rpm : 1200
Rack travel in m: 13.60...13.80
3rd speed rpm : 1000
Rack travel in m: 13.20...13.50
4th speed rpm : 700
Rack travel in m: 13.30...13.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 11.20...11.30

Measurement*

Speed 1/min : 500

1st pressure hPa : 350
Rack travel in m: 11.90...12.00
2nd pressure hPa : 550
Rack travel in m: 12.80...13.10
3rd pressure hPa : 850
Rack travel in m: 13.30...13.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 850
Speed rpm : 1200

Del.quantity cm3/ : 100.5...103.5
1000 s: (98.0...106.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 79.0...81.0
1000 s: (77.0...83.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1420...1430

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 55.0...75.0
1000 s: (52.0...78.0)

LOW IDLE

Speed rpm : 325
Rack travel in mm : 7.70...7.90
Del.quantity cm3/ : 25.0...29.0
1000 s: (22.5...31.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

: